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AMERICAN VETERINARY REVIEW

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AMERICAN VETERINARY REVIEW.

APRIL, 1909.

EDITORIAL.

EUROPEAN CHRONICLES.

PARIS, Feb. 15, 1909.

Although it is already three months since the worthy Secretary of the American Veterinary Medical Association has sent me the circular he has issued relating to the next meeting of the Association at Chicago, I regret to have been unable to notice it in our pages before this. In the body of the circular Dr. Lyman urges not only the necessity for the presence of a great number of our colleagues at Chicago to the convention which will be held during the four days beginning Tuesday, September 14, 1909,* but calls also earnestly for new applications for membership. If there are over 4,000 eligible veterinarians practising in the U. S. and Canada it is obviously curious that only 900 of them are members of an association which is soon going to be able to celebrate her 50th anniversary. It is to be hoped that the recommendation of the secretary will find good responses and that the candidates shall surpass in number those of the preceding years. The circular concludes with the offering of the following resolutions adopted by the Association which will be arranged in pamphlet form for the members.

First, concerning the reliability and efficiency of the Tuberculin Test—Resolved, That the experience which has been accumulated in great amount since the discovery of tuberculin

* Date changed to September 7, 8, 9 and 10, 1909.

shows conclusively, and now more clearly than ever before, that it affords an accurate and reliable means for diagnosing tuberculosis in cattle. The percentage of errors from the use of tuberculin when properly applied is so small as to be of no moment when compared with the vast benefits that accrue from its proper use. While the tuberculin test is not infallible, as nothing in medicine or life is infallible, nevertheless, it affords incomparably the most perfect means available for the diagnosis of tuberculosis in the live animal.

Second, referring to the Standard of the Milk Bacteriological Count—Resolved, That the American Veterinary Medical Association approves the recommendation of the Committee of the Laboratory Section of the American Public Health Association on Methods and Standards of Bacterial and Microscopic Examination of Milk.

Third, the most desirable method of dealing with tuberculous animals—Resolved, That we approve the following as general standards of procedure in dealing with condemned tuberculous cattle: (a) There should be partial and perhaps decreasing indemnity to owners. (b) Indemnity should be limited to cattle previously owned in a state for a suitable period. (c) Killing should be done under competent official inspection. (d) Passed carcasses should be utilized as fat for human food. (e) Provision should be made for the most economical use of the condemned carcasses. Owners should be always given the option of the Bang Method of dealing with tuberculous cattle.

There is an unfortunate condition, however, in that date of the Chicago meeting, 14th of September. It is that it corresponds exactly with the date of the 9th International Veterinary Congress, which is to be held at The Hague between the 13th and 19th of September, and to which so many American veterinarians are somewhat bound to attend by being members of the National Committee for the United States, organized by my friend Prof. Leonard Pearson. I merely mention this, as the circumstances may have escaped the attention of the interested

parties. There are in the National Committee names that would represent well for the United States at The Hague, but that it would be regrettable not to see in Chicago. Among the visitors of the European veterinarians who visited America last year and were at Philadelphia and Washington, Americans have made friends. Would it not be good for the American profession to have a large delegation so as to permit the colleagues of the old world to appreciate and learn to know better and more intimately their brethren of the new?

* * *

GERM CARRIERS AND TYPHOID FEVER.—I had just been looking again over the little circular 118 of the B. A. I. where the work of Doctor E. C. Schroeder, the Superintendent of the Experiment Station of the Department of Agriculture is recorded. "The unsuspected but dangerous tuberculous cows;" where it is said "that we are forced to assume for practical purposes that every tuberculous cow is dangerous from the moment she is known to be affected. We know that if she is not immediately dangerous she will rarely fail to become so, first intermittently, expelling tubercle bacilli occasionally and then continuously . . . The dangerously tuberculous cow from the provisional point of view is an animal that is expelling tubercle bacilli from the body, either with her milk, urine, fæces, saliva or otherwise, in such numbers and with such frequency that their presence can be certainly detected. The examination made at the Experiment Station shows that the commonest way in which tubercle bacilli pass from the body of a tuberculous cow is with the fæces . . ." And then I had glanced to the illustrations which represented seven cows, and read their concise history. All were in apparent excellent health. Their condition might be called excellent; some had fully developed udders, but they still were affected with tuberculosis for various lengths of time; and in all, tubercle bacilli were found in various quantities in their fæces and were passed by the animals, thus spreading means of possible infection at large. Then the *Presse*

Médicale came to pay me its semi-weekly visit and in it I found almost the very continuation of the article of Doctor Shroeder that I had been reading, almost the same question; subject for comparative pathology question.

The article was headed "Germ Carriers and Typhoid Fever" (*Porteurs de germes et fièvre typhoïde*). The existence of germ carriers and distributors of Eberth bacilli is now accepted, but one point seems yet to remain doubtful, viz: the importance that they have to the point of view of contagion of typhoid fever. According to some German statistics, out of 6,700 typhics examinations made in three years 310 continued to pass Eberth bacilli for more than 10 weeks after their recovery. Of these some kept their condition for three months, others remained so permanently. These 310 subjects gave the disease to 276 cases. Conclusions: The bacilli that germ carriers transport and distribute round them are virulent. Women form the greatest number of the carriers of Eberth bacilli and are extremely dangerous, specially those that are servants and employed as cooks. There are instances where infection has taken place from eating food prepared by persons who cared sick people or by others that had recovered but were carriers of microbes.

* * *

The history recorded by Doctor Soper at the Biological Society of Washington, says Doctor Debre, where a chronic typhoid germ distributor is related is worth reproducing. Soper went to Oyster Bay to visit a family where six persons were affected with typhoid fever. Searchings for the causes of the contamination were made thoroughly; and in all, milk, cream, water, vegetables, fruits, etc., etc., the results were negative. It was found, however, that the first case had occurred ten days after engaging a new cook. Further inquiry about her revealed the fact that during ten years she had worked in eight families, and that in every one from ten days to several weeks after her

entrance in the house, typhoid fever appeared; taking principally the other servants working with her and also the people for whom she worked. In ten years she had been the cause of 36 cases of typhoid fever. She carried quantities of bacilli in her fæces for years . . . It is not only cooks like her that are dangerous, but any bacilli carriers may that have to prepare or assist in the preparation of human food. The number of cases due to that cause is considerable, although not correctly known.

Of course, there is a great difference with the dangers that may result in the condition of the germ carriers, between those that carry the bacilli of Koch and that of Eberth and there is no relation between them, but yet there can be no doubt that as far as the result, the *contagion*, is concerned, for both diseases, it is the same, the cause is alike. But the sanitary measures that both diseases require differ widely. If the tubercle carrier can be destroyed, for the other dangerous living beings the only possible way to guard against infection would be to absolutely prevent carriers and distributors of germs to be employed to prepare human alimentary substances until they are found to be free from bacilli. A measure which I believe is carried out in New York State by the Detention Hospital.

* * *

THERAPY OF OIL OF TURPENTINE.—If oil of turpentine has strong irritating properties when applied upon the surface of the skin, on the contrary it is harmless upon mucous membranes and solutions of continuity. And not only does it not irritate these surfaces in a noticeable manner, but even sometimes it seems to have a soothing effect. Besides this, when it is applied upon wounds, or ulcerations with soft granulations and serous secretion, it improves them rapidly and brings them to quick cicatrization. It dries up muco-purulent discharges. And its usefulness is appreciated in producing amicrobian abscesses of fixation or in the treatment of so-called shoulder lameness.

All those properties are well known; but for what it is less resorted to, is for the great value of its injection, or of systematic painting, over the inside surface of open suppurating or sero-bloody cavities.

In the *Recueil de Medecine Veterinaire*, an army veterinarian, Mr. P. Charon, has recently published the results he has obtained, and related a few cases where by the use of oil of turpentine, the length of time the animals were laid up was considerably shortened and recovery simplified.

A mare had a very deep wound of the thigh, between the long vastus and the semi-tendinosus muscles. She had been under treatment for over one month; treated at last with injections of turpentine, she recovered in twenty days.—A horse had fistulous withers, spinous processes of vertebrae and part of the cartilage of the scapula have been removed. The discharge was profuse; five or six injections brought cicatrization in ten days.—A mare had a sore back, which had become complicated from various causes and remained rebellious to all treatment for several weeks. In four days a few cubic centimeters of the oil of turpentine were injected and followed by a rapid closing of the wound. But where Mr. Charon has principally had brilliant success is in the treatment of sero-bloody cysts, no matter in what region they were, in which the treatment consisted in free incision and daily coatings of the cavity with a layer of oil of turpentine. The length of time required for arrest of suppuration and the cicatrization has varied between six and eighteen days, when the animal could be returned to work. In only one exception the animal was under treatment for twenty-four days, but with him it was only in the last sixteen days that the turpentine was resorted to.

Without mentioning more cases, Mr. Charon puts the question, How does the oil of turpentine act? and he says: "The paintings of the inside of the walls of open sero-bloody or purulent cavities or the injections within these of spirit of turpentine is not accompanied with nervous irritation, there is no itch-

ing, as it is observed in the sub-cutaneous injections of spirit free from guaiacol. The peculiar action of the oil comes from its physico-chemical properties. It is true that we do not know what changes turpentine undergoes in the blood and in the tissues, but we know that exposed to the air, the spirits of turpentine attracts energetically the oxygen of the atmosphere in ozonizing it. For some, this ozonizing action is continued after absorption in the organism, even on the level of the eliminating surfaces. It can then be understood that this ozonization takes place in direct contact with the tissues where air can reach and where aerobic microbes, oxygen fixators, grow and multiply.

Superficially the slight, soothing irritation occasioned by oil of turpentine is sufficient to promote in the wounds or cysts a true cellular activity. When in contact with the spirit, the blood becomes redder and richer in white corpuscles, an abundant leucocytose takes place, and the consequence of this leucocytar increase is a vital, phagocytar, acute anti-microbial activity, with a less production of pus, a more complete utilization of the whole white corpuscles in the work of repairs. The anti-microbial antiseptic power is explained by the absorption of a certain quantity of water when in the presence of tissues with alkaline reaction and by the transformation of the oil of turpentine into terpine and terpinol. If this antiseptic power has been taken advantage of in the treatment of pulmonary gangrene, cancer, lock-jaw, anasarca and others, it can be easily understood that when in the presence of the ordinary vulgar microbes of suppuration, oil of turpentine can act efficaciously.

* * *

THERAPEUTY.—May I be allowed a few remarks on Therapy and refer to a communication from a German paper, *Munchen. Medec. Wochenschrift*, by Dr. P. Erlich, upon ARSENIC, ATOXYL and TRYPANOSOMES.

The phenomena of the vital coloration of tissues constitutes certainly one of the most curious facts of biology. It is diffi-

cult to understand *why* the methylen of blue, for instance, colors nervous tissue, neutral red cellular granulations, pyrol red the interstitial tissue of testicles. For want of a better explanation, a special affinity of this or that substance by this or that complexity of cells is admitted. Therefore, according to the terminology of Erlich, the existence is admitted, in relation with vital coloration, of chemical substances neurotropic and lipotropic. But does that tropism exist only for chemical substances properly so called? In a recent conference at the German Society of Chemistry, Erlich has again mentioned on this subject the substances resulting from the cellular activity and which are formed in the organism during an artificial or spontaneous immunization. These substances are strictly bacteriotropic, in this, that they would fix themselves upon bacterias and destroy them, without having the slightest action upon the organism itself. Erlich believes that it is in the researches of analogous substances that the future of therapy rests.

Can this research be made in a scientific manner, that takes for its guide, facts already established at present? Are they facts authorizing the thought that bactericid substances, deprived of all toxicity upon organism shall be made? Erlich believes it and during his conference, mentioned to support his opinion, a series of very curious experiments, concerning the action of arsenic and atoxyl upon trypanosomes. We know that arsenic has proved less efficacious, in the treatment of trypanosomes, than atoxyl, which is a meta-arsen anilide. Then, if in a molecule of this substance is introduced acetic acid, a new compound is obtained which has scarcely any toxicity for the organism but whose bacteriotropic action is considerably increased. This new substance is the arsenyl-acetic acid.

* * *

Experiments made with this acid have shown besides a very curious fact. *In vitro*, trypanosomes are not affected, even by concentrated solutions of this acid. But on the contrary when

this acid is injected, even very diluted, to an animal infected with trypanosomes, those are rapidly destroyed in the organism. How can this inefficacy of acetic-arsenic acid *in vitro*, and its very energetic action in the organism, be explained? Can it be admitted that being decomposed in the organism, this acid gives birth to a bactericid substance? Must it be supposed that this acid acts by stimulating the production of amboceptors from the cells?

The answer is given by a handsome experiment of Erlich. Upon trypanosomes, *in vitro*, is made to act, in various degrees of concentration, an oxidated arsenical compound, excessively toxic and a reduced bivalent arsenical mixture, having a toxicity much reduced. It will be observed that the oxydated compound does act upon the trypanosomes only in a concentration of 1 p. 20. By opposition, the reduced product kills instantaneously trypanosomes at a concentration of 1 p. 100,000, in 3 minutes if concentrated in proportion of 1 p. 500,000, in 18 minutes in concentration of 1 p. 10,000,000.

The deduction is that the inefficacy of an arsenical product, *in vitro*, and its efficacy in the organism depends simply on the transformation in the organism of the oxydated into a reduced product. Likewise, again starting from the same principle, chemistry can find new combinations with remarkable affinity. Thus Erlich having met with trypanosomes, which resisted the action of all the arsenical preparations that he had. Guided by some considerations, he has prepared a new compound of arsenic, the arsen-phenyl-glycine, which has proved very efficacious against refractory trypanosomes.

* * *

COLIC.—The subject of colic is one which always presents some points of interest, no matter if it is merely the relating of a single case or that of a series of observations, there is always something to gather from it. The *Veterinary Record* of January of this year, has from Mr. Lomas, M. R. C. V. S., an

article which is a record of the cases of colic which he has had to treat during the space of ten years, and from which good additions to the whole subject of colic can be extracted.

The horses were of the various types of vanners used to do a work very severe and where all with few exceptions had to trot more or less. There were 1,244 cases of colic attended to, and they were in the record arranged according to years and months. In a first table, it is stated that successively from January to December in those ten years, the number of cases seen have been 100, 100.90, 108, 89, 89, 107, 115, 135, 92, 117 and at a first glance it appears as if the influence of the weather and season had something to do with the causation of the colic; as indeed, the months where the number of cases were the largest, October and December, are those where bad weather prevails. But Mr. Lomas has not arrived at that conclusion, or at least if bad weather has an influence, it is not a direct one but an indirect, which is namely the increase of work. In these months, indeed, the work is the hardest. And again apart from this, it has been noticed that, such factor, work, is, that it has been quite rare to have a case of colic on Sunday, when almost all the horses are resting and those that work do so lightly.

The number of deaths amounted to 77. for which 32 are credited as due to twist of the intestines and 25 to volvulus. Has the hardest work any relation with these two causes of death? Comparing the figures as they are given by month, it is observed that as the work is harder, which is always the case in autumn, there is an increase in the number of twists, 5 in September, 7 in October, and there is also a majority of deaths from volvulus in the second half of the year as compared with the first when the work is less severe.

A point of interest with the statement of Mr. Lomas, is that the death rate is very largely controlled by the youth of the horses and the work exacted from them. For instance, in the three first periods of service, 13, 13, and 15 horses have died and the average of deaths fell down afterwards to 3 to 2 and 1 to

none as the animals grew older and better fitted to stand the work. Old horses, over $3\frac{1}{2}$ years in service, have colic but the death rate is very low as compared with those of shorter service.

After these interesting statistics Mr. Lomas makes allusion to the frequency of the occurrence of twists taking place in the large colon at the beginning and the termination of that portion of the intestines and in relation with this, mentions that a twist at this place, has a characteristic diagnostic symptom, viz: the *blanching* of the visible mucous membranes, which is distinctly recognizable two hours before death. For him also, when cases, which present themselves first with intermittent pains, suddenly change with continuous sufferings, it is at that time that the twist occurs. At least it has been so in the cases he has seen. At first an advocate of Eserine, he met with a certain number of cases which proved fatal which he rather attributed to the use of that drug, he stopped using it, but found that he had twist just as well with or without.

There is no doubt that these facts make a good addition to the general literature of colic!

* * *

ATHEROMA.—Atheroma is known as an affection which exists in horses, but to what extent is probably not generally appreciated. On that account the investigations that I find recorded in the Comptes Rendus of the Société de Biology are interesting.

It is actually admitted by many scientists that intestinal intoxication plays a very important part in the etiology of the atheroma. As the intoxication depends certainly on the condition of the microbial flora, which varies according to the kind of alimentation, it was evident, said M. M. Weinberg and A. Vieillard, that it was interesting to know exactly the proportion of cases of atheroma in herbivorous animals in comparison with those that were found in animals which are submitted to carnivorous or mixed diet.

It is already asserted that rabbits can present atheromatous lesions, not as the results of experimentation but naturally. These lesions have been found in 48 cases out of 692 rabbits or in 6.6 per cent. of the cases.

What is the frequency in horses?

Already Kitt, Cadeac, Hans Lyding, Ball have made investigations in relation to the vascular lesions of horses, but they have not given a very exact idea of the frequency of these lesions. M. M. Weinberg and Vieillard have examined, at one of the abattoirs of Hippophagy in Paris, 1,511 horses, made careful inspection of the heart, the aorta and its principal branches and they have found very remarkable facts, which they gathered into a table showing that atheroma of the aorta was found in 57 cases, and that of the cœliac trunk in 58 cases, say 7.6 per cent. of the cases. The lesions existed at the cross of the aorta and often on a level with its diaphragmatic portion. In the majority of cases the calcareous deposits presented the same aspect as those of the spontaneous atheroma of rabbits.

Castration does not seem to have any action or influence in the etiology or development of the lesions. Out of 44 cases where lesions existed, 27 were in stallions and mares, the other 17 in geldings. However, in stallions the calcareous deposits of the aorta were much larger than those found in geldings.

The same can be said in relation to the organs with internal secretion. One small adenoma was found in a suprarenal capsule and 4 cases in the thyroid gland out of 57 atheromatous horses. The conclusions of the communication are resumed:

1.—Out of 1,511 horses, 7.6 per cent. presented atheromatous lesions.

2.—In the great majority of cases, the calcareous deposits had the same aspect as those of the spontaneous disease of rabbits.

3.—Castration and lesions of organs with internal secretion do not seem to have any influence on the etiology or evolution of atheromatous lesions.

* * *

BIBLIOGRAPHICAL NOTES.—The publishing house of Taylor & Carpenter, at Ithaca, has sent us a third edition of the *Pathology and Differential Diagnosis of Infectious Diseases of Animals*, by Doctor Veranus A. Moore, the worthy Director of the New York State Veterinary College. It is just two years ago that I had the great pleasure to notice in our pages the second edition of the same work, and it is very gratifying to see that whatever praise I may have given to the work then, students and practitioners have appreciated, by obliging the author to revise and enlarge the new edition. It is not that it forms a much larger book, nor that the revision has made it entirely a new work, no. But in perusing, while one may find again the same arrangement in the revision and contents of the chapters, yet additions are met with in quite sufficient numbers to give the third edition the aspect that whatever new facts in the pathology and differential diagnosis of infectious diseases may have come out in the last two years, Dr. Moore has not failed to take advantage of them and to present them to his future readers, which no doubt will again be plenty and will make for the work another success.

* * *

For the students in our many schools, Doctor H. D. Hanson, the recently appointed Professor of Materia Medica and Therapeutics in the Faculty of the Veterinary Department of New York University, the New York-American Veterinary College, has just offered the second edition of his *Practice of Equine Medicine*, which, following the examples of some authors, he publishes himself.

Hanson's *Practice of Equine Medicine* is a work that by its value ought to have commanded a larger number of editions,

unless the printed copies issued in the first have been too numerous. Arranged as it is by questions and answers it is an indispensable work which must fill the essential purpose for which it is written and well written. Of course, as the author says, it is interesting to the busy practitioner; but I think that for students it is *the work by excellence* when at a certain time of his studies he wants to review and prepare himself for proper answering to possible questions when the critical moment of the examination has come.

The first edition issued some years ago was favorably received by the profession, the second will prove still more satisfactory, no doubt and we can hope for an early third edition, this time considerably enlarged; as if condensation is good, a little magnifying would give Practice of Equine Medicine a more imposing and valuable aspect.

A. L.

THE CORNERSTONE.

It may be interesting to readers of the REVIEW, especially at this time as our thoughts turn to our forthcoming international veterinary convention at Chicago in September, to know that, figuratively speaking, the cornerstone of the American Veterinary Medical Association was laid in that city in 1890. It was in Chicago in September of that year that the late Dr. Charles B. Michener, then President, said: "To-day we place the cornerstone; the foundation of our association has been building since June, 1863." The association met again in Chicago in 1893, when another big stride was taken in advance.

More than a quarter of a century, 1863-1890, to some of the younger members of the profession may seem a long time for the building of a foundation, although it is not strange at all that such a long period of time was consumed for this all-important part of the work which was undertaken and had to be carried on for many years by a few far-seeing, self-sacrificing

men whose ideals are at last being rapidly realized throughout the length and breadth of the American continent. These men well knew that a substantial and enduring foundation could not be built in a hurry without well-laid plans and carefully-drawn specifications.

The wisdom of laying the cornerstone at Chicago, and not in one of the large Eastern cities where the association had its inception and where all its meetings, except one, had been held, has been demonstrated in many and unmistakable ways. Although named the United States Veterinary Medical Association, it had the characteristics more of a local than a national organization prior to 1890 and it was not until 1898, at the Omaha convention, that it became an international body.

The cornerstone was well laid, at the right place and with the right kind of cement, and by the action of the Omaha convention in 1898 the association was enabled to carry out more fully its noble purposes and has become potential in the advancement and upbuilding of the profession on this continent without regard to political limits or geographical boundaries. Those who attend the 1909 meeting will have the satisfaction of seeing and learning something of the imposing edifice whose cornerstone was laid at Chicago in 1890, and is being erected by the American veterinary profession upon a foundation which took more than a quarter of a century to build. The profession of the entire continent now enjoys intimate relationship and the broad scope and important character of the work of the American Veterinary Medical Association is too well known by the profession throughout the world to need further comment.

The association now has a large and highly creditable Canadian membership. The 1903 convention was held at Ottawa, Canada. No better evidence of the fraternal ties that unite the veterinarians of Canada and the United States could be given than the fact that at the last annual convention held at Philadelphia, in 1908, Dr. John G. Rutherford, Veterinary Director-General and Live Stock Commissioner of the Dominion of Can-

ada, was elected to the presidency of the American Veterinary Medical Association and consequently we shall have the distinguished honor of having our Canadian colleague preside at our deliberations at the Chicago convention.

The REVIEW has always advocated the Central West as the very best possible meeting place for the A. V. M. A. Chicago is the ideal spot, not Western at all, but central and equally accessible from all parts of the continent. The railroad facilities are the best in the world and the accommodations in Chicago for a large convention are unsurpassed anywhere. These advantages Chicago has to offer to conventions of all kinds, but aside from her central location, accessibility, railroad and hotel accommodations she has special and peculiar attractions for the progressive veterinarian. Here are to be seen the great horse and live stock markets, stockyards, abattoirs and packing-houses; the meat-inspection service of the federal Bureau of Animal Industry as conducted in mammoth establishments; unsurpassed facilities for pathological exhibits, unlimited material among the several classes of live stock for clinical study and demonstration, to say nothing of the interest the veterinarian has in veterinary education and administration work for which the Western metropolis is noted.

The meetings in recent years have all been well attended, each one better than the preceding one and notable additions have been made to the membership at each meeting. While proud of the splendid meetings, yet we look forward to something at Chicago that will eclipse the largest veterinary conventions and congresses that have ever been held in the annals of veterinary progress in any country of the world. If the 46th annual meeting of the A. V. M. A. is not thoroughly representative of the present progressive condition of the American veterinary profession as well as being by big odds the largest veterinary meeting ever assembled in this or any other country we do not interpret the signs aright. We also venture the prediction that there will be several hundred applicants knocking at our doors for

admission to membership. After all is said and done the 1909 meeting, like all other meetings of scientific bodies, will be judged by the scope and character of its deliberations and accomplishments rather than by the multitude in attendance. It therefore behooves those who contemplate contributing to the program to make adequate preparations at an early date so that what is offered may be creditable to ourselves and advantageous to the profession in general.

Another thing in connection with these annual meetings is the supreme importance of the enlightenment and direction of public opinion regarding veterinary problems and administration which may be afforded thereby. Our forthcoming meeting offers an exceptional opportunity for this very sort of thing and we are not sure but that the enlightenment and direction of public opinion in America to-day may not be quite as important to the health and wealth of mankind as the advancement of the science itself.

HANGED ON MOTHER'S BACK.—The oddest story of the killing of a calf in the annals of the profession comes from Farmer William Reid, of Chester county, Pa. While the cow lay in her stall at night, a calf, tied in the same stall, clambered over her.

The cow rose, lifted the calf on her back, and when morning came there it was, dead, hanged on its mother's back.

RELEASE OF QUARANTINE FOR SHEEP SCAB.—As a result of the good progress made by the Bureau of Animal Industry in co-operation with state authorities in the eradication of sheep scab, an order has been issued by the Secretary of Agriculture, effective April 1, removing the federal quarantine on account of this disease from Montana and from portions of North Dakota and South Dakota lying south and west of the Missouri river. The states and territories remaining in quarantine for this disease are Washington, Oregon, California, Nevada, Utah, Colorado, Arizona, New Mexico, and Texas. The infection in parts of this area is so slight and such good headway is being made toward its eradication that the Bureau hopes to be able to release further territory from quarantine during the present year.

Indexed.

ORIGINAL ARTICLES.

THE ECONOMIC IMPORTANCE OF TUBERCULOSIS OF FOOD-PRODUCING ANIMALS.*

BY A. D. MELVIN, D.V.S., CHIEF OF THE UNITED STATES BUREAU OF ANIMAL
INDUSTRY, WASHINGTON, D. C.

INTRODUCTORY.

It is the purpose of this paper to call attention briefly to the serious injury which tuberculosis causes to the live stock industry from the economic standpoint, and to suggest means of overcoming it, discussing the subject as it affects the United States. Regardless of the question of the communicability of tuberculosis from animals to man and the bearing of animal tuberculosis on the public health, it is a well known fact that this disease causes heavy financial loss to the live stock industry; and while the saving of human life affords the highest motive for combating tuberculosis, the prevention of financial loss is alone a sufficient reason for undertaking the eradication of the disease from our farm animals.

The movement in the last few years for a more wholesome food supply has resulted in drawing attention to the part played by tuberculosis as regards both health and economics. It must be realized that the exclusion of tuberculous meat and dairy products from the food supply means a reduction in the quantity of available food, with a corresponding tendency to an increase in the cost of necessities of life. The economic problem therefore

*Read before the International Congress on Tuberculosis, Washington, D. C., 1908.

concerns not only the stock raiser and the producer but the consumer, which means practically everybody. No nation is so wealthy that it can afford to sacrifice, year after year, a considerable and increasing proportion of its food supply, especially when by proper means the loss can be reduced and in time prevented entirely. This is a problem that must be faced eventually, and the earlier this is understood the more easily it can be solved.

THE PREVALENCE OF ANIMAL TUBERCULOSIS.

While tuberculosis among animals is less prevalent in the United States than in some other countries, it has progressed to an alarming extent even in this country and is undoubtedly on the increase, especially in states where no adequate measures have been taken against it. The animals principally affected are cattle and hogs. The disease readily spreads among cattle that come in close contact with each other, as in dairy herds, and experiments by the Bureau of Animal Industry have shown that it is easily communicated from cattle to hogs by the common practices of giving skim milk to hogs and allowing them to feed on the excrement of cattle. The increase of tuberculosis among hogs in the United States has been very marked in recent years. Sheep and goats are rarely affected, probably because of a natural tendency toward immunity or because they are not generally exposed to infection.

The two principal sources of data as to the prevalence of tuberculosis among live stock are: (1) meat inspection statistics, and (2) records of the tuberculin test. Meat inspection throws light on the disease in cattle, hogs, sheep, and goats, while the information derived from the tuberculin test is practically confined to cattle.

MEAT INSPECTION STATISTICS.

The federal meat inspection, as extended under the law of June 30, 1906, now covers more than half of all the animals

slaughtered for food in the United States, and the proportion of animals found affected with tuberculosis under this inspection service affords a basis for forming some idea of the extent to which the disease exists among the meat animals of the country.

The following table shows the number of animals of each kind slaughtered under government inspection during the fiscal year ending June 30, 1908, and the number and percentage found affected with tuberculosis.

Animals slaughtered under federal inspection in the United States, with number and percentage found tuberculous, during fiscal year, 1908.

Kind.	Number Slaughtered.	Number Tuberculous.	Percentage Tuberculous.
Cattle	7,116,275	68,395	0.961
Calves	1,995,487	524	0.026
Hogs	35,113,077	719,309	2.049
Sheep	9,702,545	40	0.000
Goats	45,953	1	0.000
Total	53,973,337	788,269	1.460

Even a larger proportion of the animals slaughtered at establishments without federal inspection are tuberculous, as one effect of a rigid inspection is to cause the establishments under inspection to exercise care in buying animals so as to minimize condemnations, while suspicious looking animals are naturally diverted to the small local abattoirs that have no inspection. This was demonstrated by comparing results at establishments soon after they were placed under inspection by the new law with those at establishments where inspection had been in force for a long time, relatively twice as many cattle being condemned for tuberculosis at the former as at the latter places.

Taking these facts into consideration, it seems likely that more than one per cent. of the beef cattle in the United States are affected with tuberculosis to some degree, while over two per cent. of the hogs slaughtered are affected.

THE TUBERCULIN TEST.

It is known that dairy cattle are more generally affected than beef cattle, as the tuberculin test has shown that from 5 to 25 per cent. of the cows supplying milk to certain cities were tuberculous. For instance, tests made in 1907 on a large proportion of the herds supplying milk to the city of Washington showed about 17 per cent. of the cattle reacting.

For fifteen years the Bureau of Animal Industry has been preparing tuberculin and supplying it to state and city authorities for official use, besides using it in tests by its own employees. Recently the reports of tests made with this tuberculin during this period have been carefully analyzed and tabulated. Out of 400,000 cattle tested there were 37,000 reactions, or 9.25 per cent.

The majority of the cattle tested were dairy cattle, and the tests were made under various conditions. By far the larger proportion of the tests were made on cattle that had been within a state for a year or more. In some cases tests were made compulsorily on all cows supplying milk to a city; in other cases they were made when requested by owners, and in still other when the presence of tuberculosis was suspected in certain herds. It is impossible to determine accurately the weight of all these factors; but considering the fact that while dairy cattle largely predominate their average is reduced by a certain proportion of other cattle, and offsetting against this the fact that the testing of herds under suspicion tends to raise the average somewhat, it seems reasonable to conclude from these tests that probably ten

per cent. of the dairy cattle in the country are affected with tuberculosis.

A remarkable feature of the reports referred to is the manner in which the diagnosis by the tuberculin test was confirmed by post mortem examination or reacting animals that were slaughtered. Out of 24,784 reacting animals slaughtered, lesions of tuberculosis were found in 24,387, a percentage of 98.39. The Bureau has positive knowledge that in at least one state the testing was not done in a careful and reliable manner. If we discard the returns from this state, the proportion of cases in which the tuberculin reaction was confirmed by post mortem is raised to 98.81 per cent. It is possible, too, that in some of the negative cases tuberculosis was really present but the lesions were so slight as to escape detection on post mortem examination by ordinary methods. Surely these figures, representing the work of scores of individuals in all parts of the United States over a period of fifteen years, bear strong testimony to the marvelous accuracy of the tuberculin test. Further evidence on this point is afforded by the slaughter, during the past year or two, in or near the city of Washington, of 126 cattle which had reacted to the test when applied by Bureau veterinarians, with only one failure to find lesions of tuberculosis on post mortem examination, the percentage of accuracy being 99.21.

Properly prepared tuberculin applied by competent persons is thus shown to be a wonderfully reliable agent for diagnosing tuberculosis. In cases where the test appears to give unsatisfactory results this is usually due to the use of a poor quality of tuberculin or to ignorance or carelessness in applying it.

The following table shows the result of the tests above referred to, arranged according to states:

Results of tuberculin tests of cattle by state and federal officers with tuberculin prepared by the Bureau of Animal Industry, 1893 to July 31, 1908, inclusive:

Alab
Ariz
Calif
Colo
Conn
Delaw
Dist.
Flori
Georg
Idaho
Illino
India
Iowa
Kans
Kent
Main
Mary
Mass
Mich
Minn
Miss
Miss
Mont
Nebr
New
New
New
New
North
North
Ohio
Okla
Oreg
Penn
Rhod
Sout
Tenn
Texa
Utah
Vern
Virg
Wash
West
Wisc
Wyo

States.	No. of Cattle Tested.	No. Reacting.	Percentage Reacting.	No. of Reactors Slaughtered.	No. Found Tuberculous on Post Mortem.	Percentage Found Tuberculous on Post Mortem.
Alabama	20	....	....	....	....	....
Arizona	49	16	32.65	16	16	100.00
California	9,618	1,112	11.56	872	872	100.00
Colorado	822	50	6.08	14	13	92.86
Connecticut	6,080	852	14.01	750	748	99.73
Delaware	7	....	....	....	....	....
Dist. of Columbia	8	7	87.50	5	5	100.00
Florida	1	....	....	....	....	....
Georgia	49	19	38.78	....	....	....
Idaho	10	....	....	....	....	....
Illinois	7,120	790	11.09	619	597	96.45
Indiana	2,935	246	8.38	129	127	98.45
Iowa	4,020	778	19.35	239	220	92.05
Kansas	120	4	3.33	4	3	75.00
Kentucky	327	37	11.31	13	12	92.31
Maine	3,264	149	4.56	116	109	93.97
Maryland	58	8	13.79	6	6	100.00
Massachusetts ...	86,223	11,853	13.75	10,760	10,688	99.34
Michigan	2,155	351	16.29	97	95	97.94
Minnesota	60,733	3,031	4.99	172	135	78.49
Mississippi	133	9	6.77	....	....	....
Missouri	1,680	133	7.92	4	4	100.00
Montana	62	25	40.33	2	1	50.00
Nebraska	105	49	46.67	18	18	100.00
New Hampshire...	164	20	12.18	19	19	100.00
New Jersey	3,293	828	25.14	584	579	99.15
New Mexico	196	1	.51	1	1	100.00
New York	4,034	565	14.00	533	532	99.81
North Carolina ..	1,207	208	17.23	43	28	65.12
North Dakota...	702	130	18.50	13	13	100.00
Ohio	2,933	425	14.49	69	68	98.55
Oklahoma	385	4	1.04	2	2	100.00
Oregon	1,466	351	23.94	274	266	97.05
Pennsylvania	90	25	27.77	7	7	100.00
Rhode Island.....	653	125	19.14	104	104	100.00
South Carolina ..	395	40	10.12	1	1	100.00
Tennessee	88	7	7.95	....	....	....
Texas	76	....	....	....	....	....
Utah	120	21	17.50	12	12	100.00
Vermont	162,570	10,628	6.54	8,248	8,166	99.00
Virginia	899	158	17.58	101	98	97.03
Washington	2,779	455	16.37	10	8	80.00
West Virginia...	60	13	21.67	12	12	100.00
Wisconsin.....	32,297	3,477	10.77	915	802	87.65
Wyoming	2	....	....	....	....	....
Total	400,008	37,000	9.25	24,784	24,387	98.39

In this compilation the following basis has been adopted in determining what constitutes a reaction, as in the experience of the Bureau of Animal Industry this method has been found to give reliable results: A reaction consists of a rise of 2° F. or more above the highest temperature before injection, provided the maximum temperature after injection reaches 103.8° F.

It should also be explained that the number of tests shown in the table represents only those of which the Bureau received reports, and not the entire number of doses of tuberculin prepared and distributed by the Bureau during the period named.

Assuming that 10 per cent. represents the prevalence of tuberculosis among dairy cattle as indicated by tuberculin tests, and 1 per cent. among cattle slaughtered for beef as shown by the meat-inspection figures, and taking 21,194,000 as the number of milch cows and 50,073,000 as the number of other cattle in the United States on January 1, 1908, as estimated by the Bureau of Statistics of the Department of Agriculture, we conclude that as a general average about 3.5 per cent. of the cattle of this country are affected with tuberculosis.

ECONOMIC LOSSES FROM ANIMAL TUBERCULOSIS.

While the financial loss caused by tuberculosis of farm animals can not be calculated with exactness, a study of the subject affords a basis for estimates sufficiently close to show that it is a serious drain on the live-stock industry.

LOSS ON TUBERCULOUS ANIMALS SLAUGHTERED.

The writer recently made an effort to collect reliable data as to the loss caused by tuberculosis in animals slaughtered under government meat inspection. Carefully compiled figures were obtained from a number of large firms engaged in the slaughtering and meat-packing business, in one instance the calculations covering an entire year's business. In arriving at the loss the general method, in brief, was to deduct from the average cost

of a live animal of a certain class the average amount realized from a tuberculous carcass of that class, the difference representing the loss.

Under the inspection system the animals found tuberculous are disposed of in three classes, according to the extent of the disease. Carcasses which show very slight infection may often be safely passed for food after the removal of the lesions, the loss in such cases of course being small. Other carcasses, affected to a somewhat greater degree but still not badly diseased, are allowed to be rendered into lard or tallow at a sterilizing temperature after all diseased portions have been cut away and condemned. In these cases the loss is more considerable. A third class comprises carcasses that are considered unfit for food in any form and are totally condemned. The loss on these is still greater, amounting in the case of cattle to about three-fourths of the cost. The salvage consists of the hide, grease, fertilizer, etc.

The loss on condemned adult cattle was found to vary from \$10 to \$75 a head, according to grade, price, weight, etc. While the loss per carcass is of course heavier on the higher priced animals, the proportion of condemnations is much greater among the cheaper grades. After weighing these factors and studying the figures the writer has concluded that for the purpose of this paper the condemned cattle may be grouped in two general classes, one representing about the average of the better grades, including those known as native and western cattle, in which steers largely predominate, and the other representing the cheaper grades and lighter weights, including "cutters" and "canners," largely cows. At present Chicago market prices the loss on the first class, when condemned, is estimated at \$45 a head, and on the second class at \$18 a head. These figures are believed to be conservative and below rather than above the actual losses, as are all the estimates made in this article. It is also estimated that two-thirds of the condemnations occur in the cheaper class of cattle and one-third in the higher class. This

proportion gives \$27 a head as the general average loss on condemned cattle. On carcasses rendered into tallow the average loss is estimated at \$20. On a percentage basis the combined average loss on cattle carcasses condemned and those rendered into tallow is about 70 per cent. of the cost of the live animals. The loss on beef carcasses passed for food is very slight, being estimated at 50 cents each.

The loss on calves condemned is about \$7 a head, and the loss on those passed for food after condemning an organ or part is estimated at 25 cents a head.

The average loss on tuberculous hogs is estimated at \$8.50 or 55 per cent. of those condemned, \$5.75 or 38 per cent. on those rendered into lard, and 50 cents on those passed for food.

Applying the foregoing figures to the number of animals found tuberculous in the federal meat inspection during the fiscal year ending June 30, 1908, the annual loss is as follows: Cattle, \$710,677; hogs, \$1,401,723; sheep and goats, \$35; making a total of \$2,112,436. The significance of this loss may be better appreciated when it is known that tuberculosis is the cause of two-thirds of the entire loss resulting from condemnations at the time of slaughter in the meat-inspection service.

The loss on animals slaughtered without federal inspection can not be so readily computed. Some states and municipalities have more or less efficient inspection systems, but the great majority of the animals slaughtered without government inspection are not subjected to inspection of any kind, and it has already been pointed out that tuberculosis is doubtless more prevalent among them than among those coming under federal inspection. It is safe to say, however, that without inspection the actual loss is very slight. Nevertheless the writer is of the opinion that the loss should be computed as it would occur under efficient inspection. Applying to the number of animals slaughtered without federal inspection the same factors that were used for those coming under inspection, but assuming that the cattle are generally of an inferior quality and worth 25 per cent. less, it is

estimated that the loss because of tuberculosis among animals slaughtered without government inspection would, if proper inspection were applied, reach \$1,720,000 a year, making the aggregate estimated loss on all food animals killed in the United States \$3,832,436 annually.

DEPRECIATION IN VALUE AND OTHER LOSSES.

Aside from the loss on animals slaughtered, tuberculosis unquestionably causes a considerable depreciation in the value of those remaining alive. There are no definite data upon which to calculate this depreciation, but it is entirely reasonable to estimate that tuberculous milch cows decrease in value annually at least one-tenth of what the loss would be if they were slaughtered and condemned, while other cattle depreciate annually one-third and hogs one-half of such loss. On this basis, taking the estimate of the Bureau of Statistics of the Department of Agriculture as to the number and value of farm animals in the United States January 1, 1908, and assuming that 10 per cent. of dairy cattle, 1 per cent. of other cattle, and 2 per cent. of hogs are tuberculous, the total annual depreciation is no less than \$8,049,889.

Tuberculosis also has the effect of decreasing the productivity of dairy cows by diminishing the yield of milk as well as perhaps in some cases by shortening their lives and consequently the period during which they produce milk. Again the amount of the loss is largely a matter of conjecture, but the writer feels that he is within reason in estimating that the average milk yield of a tuberculous cow is 10 per cent. less than that of a healthy one, and on this basis the annual loss, valuing milk at wholesale prices, is \$1,150,000.

Serious damage is caused by tuberculosis from the standpoint of breeding. The disease is found to a greater extent in purebred herds than in common stock. In adding fine animals with a view to "breeding up" his herd an owner may unwittingly also introduce tuberculosis with disastrous results. By causing unthriftiness and impairment of fecundity, the disease has an adverse effect upon the number and value of the offspring.

The influence of tuberculosis toward increasing the cost of meat and dairy products has already been alluded to. There is also a considerable economic loss resulting from the destruction of cattle in the efforts already being made in some states to eliminate the disease. The trade in live animals and in animal food products also suffers losses because of tuberculosis. Doubtless there are still other sources of loss chargeable to this disease in live stock, such as the expense of maintaining a sanitary service, disinfection of premises, etc.

THE AGGREGATE LOSS.

Taking into consideration the various items mentioned, the tribute which the United States pays each year to this scourge among its farm animals aggregates more than \$14,000,000. Such a loss is too great, merely as a matter of economics, to be allowed to continue and increase from year to year. And when in addition we consider the bearing of animal tuberculosis on human health, it seems imperative that vigorous measures should be taken to eradicate the disease from our herds, especially when such eradication seems entirely possible and practical.

THE CONTROL AND ERADICATION OF TUBERCULOSIS.

Any efforts to reduce or control tuberculosis of live stock in order to be of lasting virtue must have eradication in view as the final object. We should not temporize with such an insidious malady, but should adopt aggressive measures that will insure success within a reasonable time.

It has been clearly shown by the work of the Bureau of Animal Industry and by other investigations that hogs readily contract tuberculosis from cattle and that diseased cattle are the primary source of the infection in hogs. The main problem, therefore, is to eradicate the disease in cattle, and when this is accomplished tuberculosis may easily be eradicated from hogs.

The eradication of animal tuberculosis may as well be recognized at the outset as a tremendous undertaking which will re-

quire not only the best efforts of the authorities in charge, but the sympathy and support of stock owners and the general public. Large sums of money will be necessary, and in order that adequate appropriations may be obtained the necessity and importance of the work must be generally realized and understood.

WHAT MAY BE DONE BY INDIVIDUALS.

Much may be done by the individual stock owner with proper assistance to exclude and eliminate the disease from his animals. He should be careful to avoid the introduction of tuberculosis into his herd by requiring that any cattle purchased shall have passed the tuberculin test. He can also do much to promote the health of his animals by keeping them in sanitary stables and under hygienic conditions. When tuberculosis is suspected he should notify the authorities and have his cattle tested. When the presence of the disease is known the safest course is to have the affected animals slaughtered, but in the case of valuable breeding stock, where slaughter would involve great sacrifice, the Bang system of segregation may be used.

EDUCATIONAL WORK.

The individual, however, must first be aroused as to the danger of having tuberculosis in his herd and the importance of eradicating it, and he must also be informed as to the nature of the disease and the best methods of combating it. Valuable work in this direction may be done by the general and agricultural press and by official publications, also by lectures at public gatherings, farmers' institutes, etc.

GOVERNMENT AND STATE MEASURES.

If the campaign for the eradication of animal tuberculosis is to be comprehensive, systematic, and generally successful, it must be directed by federal and state officials conjointly, who must be armed with adequate laws and funds and supported by public opinion. Excellent work has been done by the authorities of several states during recent years, but a study of the laws and

regulations of all the states shows that in most of them the importance of the subject is not appreciated. Thirteen of the states at present require the tuberculin test on cattle brought in, this requirement usually being limited to cattle intended for dairy or breeding purposes. Fourteen states have provisions for the slaughter of animals found affected with tuberculosis and the payment of indemnity to the owners, while a few others give authority for condemnation and slaughter without making provision for indemnity.

The work of the federal government, as carried on by the Bureau of Animal Industry, so far consists in supplying tuberculin free of charge to state officers, in endeavoring to prevent the interstate shipment of tuberculous animals, and in tracing when practicable the origin of animals found affected with tuberculosis in the meat inspection service and notifying state authorities.

As a basis for further work federal and state authorities should first determine to what extent and in what localities tuberculosis exists to the greatest extent among live stock (where this has not already been done), and should first apply the tuberculin test generally and systematically to cattle in such sections.

The safest way of disposing of reacting animals, as previously stated, is to slaughter them. In order to reduce the financial loss to a minimum and at the same time guard against the sale of unwholesome meat, it is well to have such animals slaughtered at abattoirs under federal or other competent veterinary inspection. In this way a large proportion may be safely passed for food and made to yield their full meat value, while only those whose meat may be dangerous to health will be condemned.

In herds where the disease is found it is advisable to repeat the tuberculin test at intervals of six months, and after the disease has apparently been wiped out the test should still be applied once a year until it is known that infection does not remain and has not been reintroduced. Inspectors should be

stationed at important points for the purpose of testing cattle for breeding and dairy purposes, and each state that is endeavoring to eradicate the disease should require that no cattle for breeding or dairy purposes shall be admitted from without the state unless they have passed the tuberculin test. A good method of preventing the spread of tuberculosis among breeding stock would be the establishment by the state of one or more free herds of breeding cattle for the use of stock raisers in the state, or the state could certify to the health of free herds.

An effective means of locating and eradicating tuberculosis of live stock would be to establish by state legislation a system of tagging cows sent to market from infected districts for slaughter, so that when they are found tuberculous in the meat inspection they may be traced back to the place of origin, centers of infection located, and steps taken for eradication. The Bureau of Animal Industry is already co-operating with the authorities of some states by reporting on tuberculous animals, and the results so far have been very encouraging. To give the plan general application authorities should be empowered by law to require that shippers shall tag their cows in such a way that they may be identified and their origin determined.

As the eradication of tuberculosis is largely a public health measure, it is only reasonable that the state should compensate at least in part the persons whose cattle are slaughtered. This is not only fair, but it is absolutely essential if the co-operation of the cattle owners is to be secured.

It will be seen from the methods above discussed that in carrying on work for the eradication of animal tuberculosis in the United States, hearty co-operation and concurrence of action between the federal and state governments will be essential. Under the constitution the power of the federal government in such matters is limited to those aspects which concern interstate commerce, and if a state fails to do its part the federal government can not step in and carry on the work. What the federal government can do in such a case, however, is to quarantine

the state or a portion of it and thus prevent the movement of animals from such a state, but while this action would protect other states it would not help the situation within the state.

BENEFITS OF ERADICATION.

The economic advantages of eradicating tuberculosis from farm animals are too apparent to require extended discussion. They will come to the individual stock raiser and dairyman as well as to the public and the nation. Breeders are beginning to understand that it is unprofitable to go on raising cattle while tuberculosis exists in their herds. The practice is becoming more general for buyers of breeding and dairying cattle to have such animals tested before placing them in their herds, and the breeder who can give assurance that his herd is free from tuberculosis has a decided advantage in making sales. With the agitation in favor of a more wholesome milk supply there is coming a growing demand for milk from healthy herds at higher prices and as this demand increases the dairyman who cannot show a clean bill of health for his cows will find it more difficult to market his products.

To overcome the losses above mentioned is worth considerable effort and expense. The benefits to follow from the eradication of tuberculosis from farm animals are so great and so obvious that the necessary expenditures, even though they may be heavy, may be regarded as a highly profitable investment.

THIS is my twenty-second annual subscription to the AMERICAN VETERINARY REVIEW. I could not think of getting along without that monthly visitor.—(*Geo. V. Towne, D. V. S., Thompson, Conn.*)

WHY HE WAS MAD.—Stubb—What's the trouble with the writer's husband? He looks angry enough to chew tacks. Penn—And he is. She dedicated her latest book to him. Stubb—Gracious! I should consider that a compliment. Penn—Not if you knew the title of the book. It is "Wild Animals I Have Met."—(*Chicago News.*)

Indexed.

DISEASES OF CATTLE THAT MAY AFFECT THE WHOLESOMENESS OF MILK.

BY MARK WHITE, V. M. D. (UNIV. OF PENN.), DENVER, COLORADO.

Read at the Women's Club, January 19th, 1909.

I have been requested by the committee of medical men appointed by the Denver Medical Society, to appear here this evening in the capacity of a veterinarian and talk to you regarding diseases transmitted from the cow affecting the wholesomeness of the milk, and I shall be pleased to give you all the enlightenment within my power pertaining to this broad and important question in so short a time as I have at my disposal; if I can only cause you to appreciate the seriousness of wholesome milk just one-half as much as I do, or as the medical and veterinary profession do, I shall have been paid many times for my trouble, and be the means of saving thousands, and I may say millions, of people's lives by appearing here to-night.

I stand here to-night, not only in the capacity of a veterinarian, but as a citizen of Colorado and the beautiful city of Denver, also one who has the welfare of humanity at heart.

Milk is the most used and useful product for food; it has no substitute and there is no prospect that a substitute will be produced. At present milk is nearly as essential to the perpetuation of all the mammalian species as a parentage. Milk is the only food that is safe for the infant and the invalid. It is an essential part of the diet of all classes, at all ages, in one form or another. The consumption of milk is so universal that there is, or should be, a universal interest in the purity of the product. Milk is a most excellent medium for the growth and multiplication of germs or bacteria. There are undoubtedly many diseases transmitted from the cow by way of the milk, in the form of both pathogenic germs and toxic poisons.

The world at the present time is shedding tears for the great suffering in the people of Italy, but for every tear that is shed for those suffering people, there are a hundred shed for the sick and dying children of our American country, that are afflicted with tuberculosis presumably contracted from drinking milk from tubercular cows. Since milk is not cooked but is used for food raw, and being such a fine medium for germ multiplication and the carrier of disease, it has become the greatest and most important medical and sanitary question of the day.

It has been said by good authority that over one hundred thousand children in America are dying each year from tuberculosis contracted through the milk of tubercular cows; that more people are sick and dying from tuberculosis contracted from animal sources than from contact with man; that when contracted from cows the disease is more fatal, since the germs are stronger and thrive best in human tissue, therefore my dear citizens let us wake up to the seriousness of the hour, and take the necessary precaution against this controllable source of disease, we can, if we only want to. The state of Colorado and the city of Denver have the money, the scientific knowledge and the trained men to take up this important work at once and they are going to do it right when they do.

The dairymen are not antagonistic in the production of pure milk and are willing to produce what the public demand, and are willing to pay for. The public buy milk as they would a ton of coal, and in so doing fail to encourage the dairyman in producing wholesome milk.

In taking up the diseases of the cow which affect the wholesomeness of the milk, I shall only cover diseases of cattle which are common among our American cattle, for there are many diseases of foreign cattle which do not make their appearance in America. I shall not consider all the diseases of cows at this time, but shall only speak of those which are the most important.

First, we will consider "foot-and-mouth disease." This disease may be characterized by the eruption of blisters in the

mouth, around the feet, and between the toes, and is highly contagious among cattle. Practically all warm blooded animals contract the disease through the milk from a cow so afflicted, including man.

Second—Septicemia and Pyemia (Blood Poisoning). Neither of these diseases are brought about, strictly speaking by any specific organism, hence neither can be looked upon as a specific disease. The most important of these is pyemia, causing a break in the continuity of the protective tissue, as a wound, which affords an entrance into the tissues of the organism.

Among the different wounds may be mentioned cuts, bruises, punctures, burns, chemicals or frozen wounds and compound fractures of bones.

Injuries received during parturition, stoppage of the milk duct, infection of the umbilicus in the newly born are also frequent causes of pyemia.

Septicemia, usually follows surgical wounds, local suppuration, inflammation of the bowels or lungs; in fact, wherever there is a local lesion of any kind permitting germs to enter the blood. The symptoms of both diseases include primarily a high fever.

Third.—Anthrax, may be defined as an infectious disease which is caused by a specific bacteria, known as the anthrax bacilli, and it affects all animals, including man.

Fourth.—Rabies or Hydrophobia, is a disease pre-eminently affecting the dog race, although all warm-blooded animals, including man, are susceptible to the malady; which is always transmitted through the bite, milk or blood or flesh of a preceding case.

Fifth.—Black Leg. This disease is produced by a specific bacteria, readily distinguished from that causing Anthrax, and would of course being a toxic and feverish disease cause the cow to eliminate unwholesome milk.

Sixth.—Malignant Catarrh is an infectious disease pre-eminently involving the respiratory and digestive tract, although the sinuses of the head, the eye and the urinary and sexual organs are very frequently affected.

Seventh.—Texas Fever. This is a specific disease communicated by the cattle tick to cattle, which have just recently come off of a cow or bullock that lives in the infected Southern Fever district or else a cow or bullock which is not acclimated or immuned, that has recently been brought from the Northern country, down South to the infected premises. In other words the germ of the disease is carried from one cow to another by the tick, which inoculates the second animal by the bite, having at the time the Southern cattle fever germs in its mouth. As in the case of Southern malarial fever, which was until a few years ago thought to be due to impure water—but now we know that it is impossible to develop malarial fever without having first been bitten by a mosquito that has just recently bit a person with the disease, and that the disease does not come from the water, at all.

Eighth.—Tetanus or Lock Jaw. This disease is due to the Tetanus bacillus, which enters the animal by way of wound. The germs as, in diphtheria, do not circulate throughout the body, but the toxin secreted by the germs, does circulate throughout the system, and is eliminated in the milk, as a deadly poison.

Ninth.—Contagious and Normal Abortion. The cow's milk should not be used for a reasonable time, on account of toxic eliminations and high fever.

Tenth.—Cow Pox, is a disease which involves the skin of the udder of cows, causing blisters and pustules to form thereon.

Eleventh.—Poisons and Poisoning, which are eliminated in the milk and are poisonous to man. Arsenic, Lead, Copper, Zinc, Phosphorus, Mercury, Acids, Alkalies, Coal Oil, Carbolic Acid, Saltpetre, Common Salt, etc.

Vegetable Poisons.—Used as medicines. Opium, Strychnine, Diuretics, Food, Fungi, Loco Weed, Turpentine.

Animal Poisons.—As snake, bites, wasp, Bees and stings of insects and the Forage and Spanish Fly.

Vegetable Poisons.—As Laurel, Ergot and other poisonous plants or damaged, fermenting or spoilt foods also poisonous

plants found at pasture, are frequently eliminated by way of the cow's milk, and would of course render the milk dangerous for food.

MILK ABNORMALITIES.

The cause of the various abnormalities are in general as follows:

1.—Food which is abnormal either in quality or quantity. The fact that such conditions occur most frequently in cattle is accounted for by their somewhat unnatural mode of feeding. 2.—Gastro-intestinal catarrh, cachetics and other bodily diseases. 3.—Diseases of the udder. 4.—Infectious (bacterial), Thermic heat, Chemical, and electrical influences acting from without the body of the cow, and are therefore of interest in this connection in provoking diseases in man and other animals.

Watery Milk.—Is distinguished by an absence of fat and casein, and an excess of water. It is bluer in color and of relatively higher specific gravity. It is caused by poor, watery food, as, for instance, an excessive or exclusive diet of mashes, turnips or tops, etc. In some cases by some bowel disorder.

Curdling Milk.—Is one of the common faults of cows' milk. The cause is varied. On one hand they arise from digestive disorders, sour food-stuff, such as sour mash; from disease of the udder, especially inflammation, from high fever and swelling in advance pregnancy; nymphomaniacal conditions; overheating of the body by excessive exercise.

Non-Buttering of Milk (Fermenting, Frothy Milk).—The cause of non-buttering, "dumb," "frothy" or "fermenting" milk are to be sought in the digestive disorders, in general disturbance or in bad and in-nutritious food, such as turnip-tops; also in udder affections such as occur at the end of pregnancy; in the affects of great heat or cold; in the presence of other faults in the milk (curdling, rancid, putrid); and, lastly, in the presence of certain micro-organisms. If the milk of a cow thus affected be mixed with that of a healthy animal, the latter milk

is always infected. Milk which will not butter, or which ferments, is the cause of much trouble in dairies and cheese factories.

Slimy and Stringy Milk.—In this condition the milk can be drawn out into long tough threads. It is the result of bacterial infection, but there is still some doubt as to the actual causal organism. This abnormality occurs most frequently in summer, and in dirty dairies.

Bad digestion, or feeding with rotten fodder infected with bacteria, may both be blamed.

Soapy Milk.—By "Soapy" milk is understood such as has a soapy taste, which never coagulates, no matter how long it stands, but precipitates as slimy sediment and gives a very frothy cream, which is extremely hard to churn into butter. The cause of this milk abnormality is bacterial.

Blue Milk.—Is observed mostly in spring and the height of summer, particularly during moist, warm weather and in dark dairies. In the latter it may occur year in and year out, even for ten years. On the other hand, this condition generally disappears in the colder seasons, or after the air has been cleared by heavy rain. At first only one cow gives blue milk, but soon all the cows in a dairy are infected. Very often sick cows show a predisposition to the production of blue milk.

Red Milk.—Like blue milk, this also is caused by the presence of bacteria. Several kinds of bacteria possess the power of turning milk red.

Bloody Milk.—Blood in milk can be traced to several causes. Not infrequently blood may be noticed in the milk immediately after calving, and last for about fourteen days. In other cases it may be traced to inflammation of the udder, injuries inflicted on the udder by a blow, rough milking or sucking, congestion of the udder during calving, or it may be due to the application of blistering applicants to the udder.

A cow when suffering from *any* disease or constitutional disturbance producing a fever cannot give wholesome milk.

Actinomycosis.—Also known as “big-head,” lumpy-jaw, wooden tongue, etc., is a chronic disease due to infection characterized by the formation of peculiar tumors in various organs of the body, more especially the head, and due to the specific action of a certain fungus (*Actinomyces*).

This fungus is an organism which occurs in the tissues in the form of rosettes, and it has therefore been termed the “ray fungus.”

The disease is not directly transmitted from one animal to another, but it seems apparent that the fungus is conveyed into the tissues by various foodstuffs through slight wounds of the mucous membrane of the mouth, decayed teeth, or during the shedding of the milk teeth.

The tumors and abscesses may be local in the cow's head or may be generalized or scattered throughout the whole body, as in tuberculosis. We should not look upon “lumpy jaw” as a disease of the jaw alone, for it frequently involves the entire body, including the udder.

TUBERCULOSIS (Consumption).

This is a disease of cattle, and in fact all warm-blooded animals are affected. It will not go into this broad and important disease (which is to-day taking up more space in scientific literature than any other two diseases of both animal and man at the same time causing more worry and use of gray matter than any other disease known) but I do want to give you a short sketch of the disease in order for you to get the stampede with the rest of us, and appreciate the seriousness and importance of knowing that the milk that you give your children is from cows that the proper authorities have examined and pronounced free from the least taint of the disease. The cow ranks as the most susceptible animal to this disease. The percentage among cows so affected would probably run 10 per cent. in the United States, which is increasing alarmingly; something will have to be done by both state and national governments to check the

spread. I am of the opinion that it will not be many years until this great question will be handled at Washington and that there will not be any cows allowed to give milk for the American people that have the disease in their bodies. It will cost a great many dollars to free our American cattle of this disease, but it certainly would be the wisest and best investment that this Government could possibly make to-day. If the American people could be assured to-day that every cow furnishing milk to its people were free of tuberculosis, just so sure would the consumption of milk increase 50 per cent. by such an assurance of protection.

The American people are being educated what wholesome milk is and they are going to demand wholesome milk at any price and they must have it. The times have changed so that the dairy business is no longer looked upon as a haphazard business, but it must be conducted upon the most scientific, sanitary methods. The dairyman must know the laws of infection and sanitation, his cows must be free from the least taint of disease, his barn must be well ventilated and sanitary in every respect, with not a cow with tuberculosis. This question must be settled by having an expert test his cows at least once a year with tuberculin, for tuberculosis; throwing out of the herd all the cows that show the disease.

A cow affected with tuberculosis may or may not cough, she may or may not be poor in flesh. A cow with tuberculosis does not necessarily, fall off in her milk; she may be old or young; Jersey or Holstein; bred in Colorado or Tennessee. We find as much tuberculosis in one breed as another. Some accuse the Jersey cow of bringing the disease to this country and that they have more of the disease than either breeds of cattle, but this is not true. On the island of Jersey where the Jersey cattle come from there is not any tuberculosis among the cattle there and to prevent the disease from getting among the cattle there, they have in force a strict quarantine to prohibit any importation of cattle to the island, this cannot be said of any other country in the world.

As an illustration of the fact that cattle may be very fat and at the same time have generalized tuberculosis. Will cite you to the prize-winning steer that won at our stock show in Denver three years ago, he was of the Pollangus breed. This bullock when he was slaughtered and afterwards sold to the people of Denver for twenty-five cents per pound, showed to have had generalized tuberculosis. Same was true with a bullock that won first prize at the Chicago Stock Show a few years ago.

We know that a cow can give milk laden with the tubercular bacilli when she would not show any visible symptoms of the disease, and could give enough milk carrying the infection, to kill ten thousand children, before she herself would show any visible symptoms of the disease.

Since the milk is all mixed at the dairy, one cow in a herd with tuberculosis would infect the whole output of the dairy. For this reason it becomes very important to know that not a single cow in a herd has the disease.

It has been repeatedly shown that the milk from a cow suffering from the disease of tuberculosis, would produce the disease in each and every breed and species of animals and birds when fed to them. For this reason does it seem reasonable that your baby could drink milk laden with tubercle bacilli, without contracting the disease therefrom? No he cannot.

Science has reached the point whereby that when a child dies with tuberculosis, that a culture can be taken from that child's body. By the study of this culture it could be ascertained whether or not that child was infected with the cattle germ or the human germ. Many investigators have found as many as 50 per cent. of children that had died of tuberculosis, to be infected with the cattle tubercle bacilli.

The state of Colorado could well afford to make the necessary expense to free our cows of disease. We would have twice as many cows furnishing milk, twice as much money invested in the dairy business, twice as many people drinking twice as much

milk, making the dairy industry of the state worth twice as much money as it is at the present time.

Something must be done to keep up the confidence of the people in the wholesomeness of milk, or else the consumption of milk will gradually decrease instead of increasing, as it should.

Since Colorado has a national reputation for a natural health resort, and that we are entertaining so many sick people in our state, it becomes a very serious and important matter that we encourage these sick people to drink plenty of milk, and at the same time furnish them a wholesome product, and not add fuel to the already raging fire in their systems, by giving them milk that is teeming with a stronger tubercular germ than they now have in their bodies. It is therefore an economic as well as a public health question.

PRECAUTION.—Invalid husband—Did the doctor say I was to take all that medicine.

Wife—Yes, dear.

Invalid husband—Why, there's enough there to kill a donkey.

Wife (anxiously)—Then you'd better not take all of it, John.—(*Tit-Bits.*)

GROOMING.—Anciently man thought more highly of his horse than of his womankind. But woman, as it chanced, was crafty.

"Why does he esteem his horse beyond his wife?" she asked herself and resolutely faced the task of finding out.

Her first answer was: "The horse will carry a heavier load."

Her next: "The horse doesn't talk back at him."

But neither of these, somehow, impressed her as being correct.

"Most likely," she declared at length, "it's in the grooming. Well, I'll just be well groomed myself and see."

It was a lucky guess, and from that time forward woman's position rose relatively until in our day the horse has scarcely a look-in even at the horse show.—(*Puck.*)

WHY HORSES ARE OFTENER LAME IN FRONT THAN BEHIND.

BY F. C. GRENSIDE, V.S., PRESIDENT OF THE VETERINARY MEDICAL ASSOCIATION OF NEW YORK CITY.

Horsemen of experience, and particularly veterinarians, have ample opportunity of observing the relative frequency of lameness in the fore and hind extremities. It does not take very extended experience to enable one to determine that lameness in the fore legs is a much more common occurrence than in the hind.

This is the case in horses used for any kind of work, but we are of the opinion that it is so, to possibly a greater degree in riding horses, than those used for any other purpose; and this being a fact it is interesting, and instructive as well as of some practical value to determine the reason why.

Veterinarians know that strain and concussion are two important factors in producing lesions, that result in lameness, and it is therefore of value to study why the fore legs show the effects of these causes to a much greater extent, than the hind ones. In the absence of regularly kept data, it would probably not be very far off the mark to state that one meets with ten cases of lameness in the fore to one in the hind legs, so that there must be some very palpable reason for this disparity in the relative frequency of the seat of lameness.

The most important factor in contributing to both strain and concussion is weight. If one asks a number of horsemen what the approximate relative proportion of weight borne by the fore and hind extremities in a horse is, it will be found that few have thought of it, and still fewer can give it.

Although subject to variation, within limited range, it is no matter what the weight of the horse is, there is a pretty definite relative proportion in the weight sustained by the fore and hind legs.

If a horse's fore feet are put on the platform of a scale and weighed, then moved off and his hind ones put on, it will be found that his fore part weighs, approximately, one-quarter more than his hind. If he is then mounted by a man weighing one hundred and fifty pounds and weighed in the way already explained, the weight of the fore part will be increased one hundred pounds, while that of the hind only fifty.

This shows plainly the much greater strain and concussion to which the fore legs are subjected, particularly in carrying weight on the back.

Nature has made provision for this to some extent, but not to a sufficient degree to prevent the effects of this greater weight showing itself, in injuries and diseases of the fore extremities more frequently than in the hind.

Propulsive effort, which is the chief function of the hind legs, is not such a fertile cause of lameness as sustaining weight. It follows then that in estimating a horse's ability to carry weight, and stand "wear and tear" in performing saddle work, that it is to the fore legs that we have to look chiefly in forming a correct conclusion. In endeavoring to come to a determination of a horse's wearing ability in his fore legs we have to study three points, viz.: the conformation of these members, the quantity of tissue in them, and the quality of the tissue of which they are made up.

The cultivated eye of the expert horseman, on taking a side and front view of a horse's fore legs, can determine at once whether they are properly balanced, or poised.

A horse's fore legs may be said to be well poised when they are so formed that the ill effects of tension and concussion are reduced to a minimum.

They should be constructed so that strain is not lessened at the expense of increased concussion and vice versa, but they should be formed so that all weight-bearing parts sustain their due proportion of weight, and all parts subjected to tension, their proper share of strain; then they may be said to be well poised.

Desirable balance is an attribute of much value in contributing to the wearing ability of a horse's fore legs, and should be well considered in estimating his weight-carrying power.

Deficiency in "timber," and defective quality of tissue are in a measure compensated for by proper poise of leg.

The more open or obtuse the angles formed by the bones that make up the foundation of the leg, the greater is the tendency to concussion, or inelasticity of step. We have three joints in the fore leg that form angles, viz.: the shoulder joint formed by the blade bone, and bone of the arm; the elbow joint, formed by the bone of the arm and those of the fore arm, and the fetlock joint, formed by the cannon bone and bones of the pastern.

The less open or obtuse these angles are, the greater the tendency to elasticity of tread, or lessened concussion, but the greater the inclination to increased tension or strain. What is to be desired, then, is the mean between these two extremes, then we have desirable balance or poise in the fore legs and mechanical advantage as far as that obtains, in lessening concussion and strain.

Although recognizing, as we must, the distinct importance of balance in the fore legs, we must not forget that there is a property possessed by some horses that compensates for in a measure imperfect poise of those members.

Lightness of step, or elasticity of movement is inherent in some horses to a degree that nullifies, in a measure, defects of formation that would otherwise be a source of weakness.

We observe this elasticity of movement in human beings, as well as in horses. People that are by no means gracefully or well built, step very lightly both in walking and dancing, which ability is undoubtedly referable to some property of the nervous system.

In addition to the formations already referred to, as influencing the balance of the legs, we have others of much importance in affecting poise. The knee joint is very frequently the

seat of malformations that influence very materially the poise of the leg. Buck knees, calf knees, knock knees, and bow legs or knees bent outwards, have much effect upon the balance of the leg. The pastern, too, is also the seat of deviations from true formation in turned in and turned out pasterns.

The axiom that "size is strength, other things being equal," is well exemplified in the fore legs of the horse.

We can begin at the feet, and find that few keen observers amongst horsemen of much experience will say that disproportionately small feet wear well, no matter how well they are shaped. It is not difficult to realize that weight, particularly in motion, when concentrated upon small bases of support, is more apt to act injuriously upon them than if those pedestals are larger. Slender pastern bones are notoriously predisposed to ringbones.

The frequent reference to the circumference of a horse's leg below the knee is an indication of the importance that is attached to the quantity of tissue in the leg. This is sometimes expressed in the misleading statement that such and such a horse has plenty of bone. The circumference of the leg below the knee is as much influenced by the development of the tendons and ligaments as by the amount of bone, so that the expression that a horse has plenty of "timber" in his legs is a more correct and rational one than that he has plenty of bone.

Quality of tissue is also of much importance in influencing a horse's ability to stand work and remain sound.

Density or good quality of bone lessens the tendency to inflammatory action in bone, and consequently to splints, ringbones, osselets and sore shins.

Horses lacking in quality have what are called soft legs, and show the effects of "wear and tear" on slight provocation. Windgalls, puffy sheaths of tendons, thickened fetlocks, cracked heels and stocked legs are some of the conditions to which horses lacking in quality of tissue are predisposed.

After dilating upon the three chief factors which contribute to a horse's ability to carry weight on the fore legs, viz. : poise of the leg, quantity and quality of the tissue of which they are made up, it may not be out of place to again emphasize the importance of careful scrutiny of these members in estimating a horse's weight-carrying power. The fore extremities being of prime importance should be studied first. This, however, is not always done. How frequently we hear people comment favorably upon a horse's weight-carrying ability that has a bulky top. A bulky body, if not well underpinned, detracts from weight-carrying power, the reason for which is obvious. The back, too, is often referred to as being of more importance than the fore legs in contributing to weight-carrying ability. Certainly the form of the back, its length and muscularity, have to be reckoned with in looking for weight-carrying power, but we much less frequently find horses showing evidence of weakness in the back than in the fore legs.

The compensating property of elasticity of movement has been referred to as lessening the injurious effects of weight on the fore legs. Relief is also afforded in other ways. High carriage of head, with nose in, and arched neck, relieves the fore extremities, particularly if the hind legs are brought well under the body in action, thus bringing the centre of gravity farther back and causing the hind legs to more fully assist the fore ones in sustaining the weight.

USE OF BENZOATE OF SODA IN PRESERVING MEAT.—In view of the recent decision of the Board of Food and Drug Inspection of the United States Department of Agriculture relative to the use of benzoate of soda in food products, the meat-inspection regulations of the Bureau of Animal Industry have been amended so as to permit the addition of this preservative to meats and meat food products provided they bear approved labels plainly showing the presence and amount of benzoate of soda.

BLOOD SERUM THERAPY.

BY DR. CAMERON, FEDERAL MEAT INSPECTOR.

Read before the Annual Meeting of the Veterinary Association of Manitoba, Winnipeg,
Man., Feby. 16, 1909.

In writing this paper I have tried to give you some of the details of more recent investigations on blood serum therapy. Its interest lies in the fact that probably all antitoxic treatments and immunization are at least in some degree dependent on knowledge and development of these substances or antibodies in the blood. The simplest idea of these processes guarding against disease is phagocytosis. In this the phagocytes or adult white blood corpuscles are overcoming and removing micro-organisms.

Phagocytic power, however, depends little on the leucocytes themselves and much on the actions of alexins or opsonins in the blood serum. For if leucocytes be taken from a tuberculous patient and also from a healthy patient, there is no difference in the number of tubercle bacilli they will ingest if placed in the same blood serum.

These opsonins so act on pathogenic organisms that the leucocytes are enabled to engulf them and so may get the better of the disease. Positive chemotaxis in which the phagocytes are apparently attracted and negative chemotaxis where they are repelled by the bacteria may show how strong the opsonic power of the blood is.

As an example: When an attenuated virus of anthrax is inoculated into an animal, it is found that the leucocytes surround the "poison" in great numbers. Whereas if a virulent culture of anthrax is injected, the inflammation is oedematous in character and only a few leucocytes are present. In the latter case the opsonins are not sufficiently powerful to prepare the bacteria for the phagocytes so they are not attracted. This is

a case of negative chemotaxis. The presence of these substances in the blood serum, although they have not been isolated, may be made quite evident. The simplest demonstration of this is the mixing of blood serum of one animal with the blood of an animal of different species. This causes the breaking up of erythrocytes or red blood corpuscles and allows the hemoglobin to escape. In this case the red cells of the one are foreign to the serum of the other. If injected into the veins of another animal, in quantity, the serum of different species may cause hæmoglobinuria and death. 14 c.c. of serum from a horse has been known to kill a dog. Now let the serum be heated to say 60 C. before injection and it is found that the power in the serum is destroyed and no evil results from the injection.

For each disease an animal may have an inherent or acquired power of antagonism. The measure of this power of opsonins is known as the opsonic index. Each disease has a different opsonin, thus although an animal has a high opsonic index for one disease, it might have a very low opsonic index for another, and the latter would be the disease it would be more susceptible to.

White blood corpuscles can be kept alive outside of the animal body, and, when in test tubes, tubercle bacilli may be added. Then if a smear is made and stained the tubercle bacilli may be seen inside the leucocytes having been ingested by them.

The strength of the opsonins in an individual may be demonstrated and so give the opsonic index for a disease. To simplify the description suppose I wish to obtain the opsonic index of my blood to tuberculosis. I take a sample of the serum of my own blood and the blood serum of another person known to be healthy and leucocytes from anyone. Into test tubes containing my own and the healthy sera are placed the leucocytes and pure cultures of tubercle bacilli. After leaving for some time the result is obtained by counting the bacilli which have been engulfed by the leucocytes. If a given number of leucocytes in my own blood have ingested say 150 tubercle bacilli and the leuco-

cytes in the healthy serum have taken up 300, then my opsonic index is as 150 to 300, that is to say one-half.

The opsonic index for some diseases can be raised by different means, thus giving immunity and in some cases a rational treatment, if the disease has been contracted. These means are in use in several instances now.

Active immunization is given by the injection of an attenuated, or weakened, virus. In this case antitoxins are developed in the serum to overcome toxins produced by the virus. The agents used for active immunization are known as vaccines and are non-fatal doses of virulent organisms. Other agents used are killed bacteria of disease and bacterial constituents. The curative properties of mallein and tuberculin, if any, belong to these agents. The use of attenuated viruses has given the best results. In passive immunization the antitoxin is injected into the blood, the antitoxin having been developed in the serum of another animal, by the use of vaccines.

There are examples of where both active and passive treatments are used together, the vaccine and antitoxin being injected at, or about, the same time in different parts of the animal's body. Vaccines are very useful in localized infections where auto-inoculation or spread of the disease in the body is withheld. Many cases of sepsis and persistent sinuses can be treated in this way and cases which have been under treatment for years have answered rapidly to vaccination.

Autogenous vaccines which are made by the escape of bacteria from localized infection, that is by auto-inoculation, stimulate the machinery of immunization and so often prevents the spread of infection from a primary focus.

Many antitoxic treatments are prevented from working well by the presence of secondary infections. Tuberculosis often has a secondary infection, Staphylococci or Streptococci. This may account for the lack of success, in some cases, of the treatment of tuberculosis by antitoxins. This applies to all contagious diseases.

Saline solutions are used in treating diseases, but their action is more of a mechanical nature. A quantity of blood may be withdrawn from an animal, this prevents congestion, and removes some of the deleterious matter which may be present. The saline solution is injected, it dilutes the blood and so changes the medium and might thus stop the growth of micro-organisms or weaken toxins present.

The disadvantages of many of these methods of overcoming disease is the amount of work entailed. But so many men are at work on these matters now, that the technique will be simplified, and, I believe, their common use is only a matter of time.

SCENE—Two country women at the London Zoo on a bank holiday looking at a bird of prey. Mary—Lor', Jimima! What a dear little heagle. Jimima—It hain't a heagle, it's a howl. Keeper (who was standing near and overheard the conversation)—I beg yer pardon, ladies, but it ain't a heagle or a howl; it's an 'awk.—(*Bit and Spur.*)

BUTCHER OBEYED ORDERS.—The following tale was recently told to his class by Professor Comstock, of Cornell, in speaking of the trials of scientists. It appears that a professor of zoology in a sister university wished to procure some trichinous pork for experiment, and went to his butcher and asked him if he ever got any measly pork.

"Sometimes," the butcher cautiously answered, "but I always throw it away."

"Well," said the professor, "the next time you have any I wish you'd send up some."

The butcher, though somewhat taken aback, said that he would. Three weeks passed, when the professor, growing impatient, visited the store.

"Haven't you found any measly pork yet?"

"Why, yes," said the butcher; "I sent up two pounds a week ago."

"Where did you send it?"

"Why, to your house, of course," said the butcher.

The professor then remembered that the preceding week he and his family had enjoyed a boiled pork dinner.—(*Rural Life.*)

RESEARCH ON PROF. VON BEHRING'S BOVOVACCINE.

BY DR. WILFRED LELLMANN, PROFESSOR AT N. Y. UNIVERSITY.

In September, 1907, I wrote an article on research of Professor von Behring's Bovovaccine,* stating the results of my experiments with a number of calves. My experiments have been continued with a number of animals in order to get an idea about the duration of the immunity acquired.

In this regard my experimental work was continued with four animals; two of which (heifers) were vaccinated in the spring of 1905; the other two (bulls) were vaccinated in March, 1906. The heifers were tested with tuberculin in 1906, 1907 and 1908, and each time were found without the slightest reaction. They both are in excellent condition and still alive. They had been for quite some time in contact with tubercular animals. The two bulls, which had been in direct contact with a highly tubercular cow, by being confined for 3-4 months (October, November, December of 1906, and beginning of January, 1907), were first tested with tuberculin in June, 1907. No reaction.

In the fall of 1907 they were fed from highly virulent cultures and tested with tuberculin in the spring of 1908. No reaction.

In connection with these two vaccinated bulls, two control animals were fed from the same cultures, each getting 50 cg. of the cultures, the vaccinated bulls as well as the control animals (bull and heifer). The control animals had been tested with tuberculin prior to infection. In the spring of 1908, these two controls were again tested with tuberculin together with the vaccinated animals. Both of the controls showed reaction. The control animals were destroyed in the fall of 1908, showing tuberculosis of the mesenteric glands and also of the hepatic glands. Small tubercles in the liver were found with the control bull.

* Published in the September, 1907, number of the AMERICAN VETERINARY REVIEW.

In September, 1908, the two vaccinated bulls were fed again with two highly virulent cultures of bovine tubercle bacilli. At the same time, two control animals, each about a year old, were fed from the same cultures. The vaccinated animals received twice as much as the control animals, the latter getting 50 cg. each. The control animals, which had been tested prior to infection, were destroyed in January, 1909, and so were the two vaccinated bulls. The latter proved to be absolutely free from any tubercular lesions, all the organs were thoroughly examined and not a trace of tuberculosis could be found, while the control animals showed marked tubercular lesions of the mesenteric glands.

It cannot be denied that the two bovocinated bulls have shown a well developed immunity, the duration of which amounted to three years. The exposure to infection had been chosen as closely to natural conditions as possible.

As stated above, these animals had been confined to an old barn with no sanitary conditions, together with an open case of tuberculosis in a cow. Furthermore, they had been fed three times with virulent cultures.

The two cows, which were vaccinated in 1905 and which are still alive, have been tested repeatedly with tuberculin and never showed any reaction, notwithstanding the fact that for some time in 1906 and 1907 they had been in contact with tubercular animals.

My experiments have made me a firm believer in the value of bovocination. I feel further inclined to believe that the immunity acquired will last from 3-4 years, if not longer. I consider it quite probable that by using bovocaccine systematically in a herd, that means vaccinating all the young stock during the age of three weeks up to three months, and isolating them strictly until 3-4 months after the second vaccination, tuberculosis could be stamped out within a period of ten years, or to say the least, that the percentage of tuberculosis could be cut down to a very low margin. Of course, there has been no want

of professional men who have criticised bovovaccination. It is only too natural that this will happen with any new method, as one must always bear in mind that a new method will be subject to the most ardent criticism and quite often prejudice, to say nothing about personal feeling and inaccuracy.

On the other hand, bovovaccination has been indorsed by quite a number of prominent professional men, whose experiences were either based on experiments or practical use of bovovaccine. I have always made it my object to follow most strictly, whether experimentally or practically, the rules laid down by Prof. von Behring. From personal experience I know that quite a few professional men have disregarded these rules. We must take the greatest care, first in picking out perfectly healthy animals, secondly in performing the vaccination most conscientiously, and thirdly in keeping the vaccinated animals strictly isolated from tubercular animals until 3-4 months after the second vaccination under the best sanitary conditions available.

Dr. J. G. Rutherford in an article, "Control of Bovine Tuberculosis," speaks about bovovaccine, that he has nothing to say, but that the results of inoculation have been singularly confusing to him, inconclusive and discouraging, and further states that under the most favorable conditions the acquired immunity appeared to be of short duration, and any advantage which may be gained is, to Dr. Rutherford's thinking, more than offset by the danger of spreading the disease. Furthermore, he adds that according to Theobald Smith, Weber and Tirze, working under the directions of the German Imperial Health Office, reported that the udder of a cow vaccinated with human culture shed human tubercle bacilli into the milk for the period of 15 months.

I fail to see the conclusions drawn by Dr. Rutherford from these reports, as to the danger of bovovaccination in spreading the disease. I feel pretty sure that anyone who has done vaccinating carefully for nearly five years, experimentally and practically, will agree with me that there is no danger in spreading the disease by using bovovaccine in perfectly healthy animals.

Therefore I consider the conclusions of Dr. Rutherford too far fetched and I cannot free myself of the impression, that Dr. Rutherford is too much prejudiced against bovovaccination. I do not mean to say that bovovaccination could not be improved upon from a practical view. I am sure it can and will in the near future become modified in such a way that it will still increase immunity. In fact, a simplified method of bovovaccination has been worked on for quite some time by von Behring to the effect, whether a single dose of 5 I. E. at the first inoculation could be withstood by young animals. The results were highly satisfactory and the method is being practised to quite an extent. Of course, it must be understood that the animals to be vaccinated must be absolutely healthy and kept under the best sanitary conditions available for 3-4 months after vaccination. However, the elementary idea of the problem of gradually stamping out bovine tuberculosis is solved.

EDITORS AMERICAN VETERINARY REVIEW.—I beg to congratulate you and your co-workers in the quality and scope of the AMERICAN VETERINARY REVIEW and trust this year may surpass all others, previous.—(*R. A. Phillips, Oklahoma City, Okla.*)

THE VACUUM CLEANER FOR COWS.—American ingenuity has exploited the French idea of the vacuum cleaner. A traveler a few years ago saw something of the kind used to clean the streets of Paris. It did away with the offensiveness of dust, and he said to himself, Why cannot this be applied to American houses? The idea was carried out, and since then rivals of the original invention have appeared on the market, one of them being reduced in size so that it can be pumped with a handle or run like a small electric fan. A man in California invented a new nozzle attachment which he used for currying his horse. It was tried with cattle and found to remove lice and all other impurities, and now an order has come for vacuum cleaners for the herd of a large ranch, and another from one of the largest dairies in the West.—(*New York Press.*)

TREATMENT OF MANGE IN THE VARIOUS ANIMALS.

BY DR. JAMES C. BUTCHER, VETERINARIAN IN BUREAU OF ANIMAL INDUSTRY.

Presented to the 26th Annual Meeting of the Ohio State Veterinary Medical Association.

It is with a great deal of pleasure, I assure you, that I take up the consideration of this important subject and more especially since reading recent issues of our scientific journals—for some have demonstrated a valuable clinic of spasms in all degrees, and Oh! how the poor things must have suffered!

Without exception, all seemed to have about as much of a scientific idea of the subject as did the ladies who hired the horse of a liveryman and went out for a drive. A shower overtook them on the homeward journey and they were met by a man who thought it queer that one of the ladies should be holding the umbrella over the horse instead of themselves and he made inquiry as to the reason. The reply was, "Well, we were told by the liveryman that the horse was perfectly gentle—but that if it got the rein under its tail it would run away."

But now to my subject: In the first place I desire to say that I am not or will not attempt to give a scientific study of all the various headings of the subject—as: an extensive list of the mites, etc., but rather will attempt to make one phase of the subject more pleasant, in that I will try and make treatment more effective. There is no question but that Mange is looked on as a sort of bugbear in practice, and if I can make treatment of it more effective and at the same time less discouraging my object will have been attained.

I consider the life history of the mange mite an important subject and a thorough knowledge of it must be kept in mind for treatment to be effective. A mere mention of the fact that the disease may be diagnosed in from ten to fifteen days from the

time of infection and that the mites reach the stage of reproduction in from twelve to fifteen days will aid us in understanding at once the various suggestions that will follow. We must also keep constantly in mind the exceedingly contagious nature of mange—so that we ourselves will not be guilty of acting as the intermediate agent or carrier of the mites.

Other things—many in number may be mentioned—we find the disease in emaciated animals, or those with impaired function, and consequently having little exudates or oily substance in the epidermis. Were it not for the uncared for animals on the ranges in the great west—that is those cattle living solely on the ranges—without other food and which readily become infected—after exposure, it would be an easy matter to free the great plains of the pest.

We must also remember that in no place in all our routine of practice will thorough disinfection give as gratifying results as in the treatment of mange. In fact unless we intend to accompany treatment with thorough care and hygienic surroundings we may as well not begin.

Another point equally important is: that treatment of all exposed animals is very necessary. To illustrate: you are familiar with the fact that to exterminate glanders in horses it is necessary to kill all animals showing infection. Some of those horses, if left alone, would work along with but slight inconvenience for a number of years, yet in that time they would infect and destroy a large number of other horses. So in the treatment of mange; one animal that is in good condition and having good care and feed will harbor mites for weeks or even months without showing symptoms of the disease, yet will re-infect an animal that is in a weakened condition from a previous attack.

When we come to the subject of treatment we must remember that a large quantity of the remedial agent will be needed so that we must resolve the chemicals used into their most useful state.

I cannot better illustrate this than to give you the formula commonly used by the Department of Agriculture, and the method used in preparing same.

R

Flowers sulphur	25 lbs.
Unslacked lime	12 lbs.
Water, q.s., ft.	100 gallons.

To prepare: Slack lime; thoroughly mix sulphur with lime, adding sufficient water to form a thin paste; have container, with water in sufficient quantity; to the water add lime and sulphur. Boil for two hours, or until all particles are dissolved, stirring at times to prevent burning. Allow solution to cool, and all sediment to collect in bottom of container, then draw off all of solution except sediment, measure same to get proportions and add water q.s. ft. original amount. By this method we have both the lime and sulphur in solution and a much more effective germicide than either alone, as well as having a solution that is much more economical and far better to apply than the original substances. We can easily have the solution twenty times the strength needed and give directions for its preparation when prescribing.

To treat animal: have solution at temperature of 105 degrees and keep it at that point. Have animal in comfortable place to prevent chilling. (If an outbreak occurs among large animals, build a vat sufficiently large to swim animal.) Thoroughly saturate all infected as well as all exposed animals.

Separate animals infected from those exposed, after dipping, and give those infected a second dipping between the 10th and 15th day, from the date of 1st dipping. This, in brief, is the method of procedure and will be found most effective, with most forms of mange.

In conclusion, and aside from my subject, let me add—that I hope that the spirit of the recent holiday season will linger round you during your deliberations in Ohio's fair capitol city. I hope to meet with you again ere many of your annual meetings come and go and you may be assured of my best wishes for a great meeting and for a successful year for all and God's blessing on you in yours—the noblest profession in the world.

REPORTS OF CASES.

"Careful observation makes a skillful practitioner, but his skill dies with him. By recording his observations, he adds to the knowledge of his profession, and assists by his facts in building up the solid edifice of pathological science."

REMARKABLE RECOVERY FOLLOWING OPERATION OF TENOTOMY.*

By Dr. W. E. MARTIN.

Last July I received a postcard requesting me to visit a farm 14 miles west of the city. It stated that a lame horse needed my services. Upon arrival at the farm my client took me to where several plows were working; I had no difficulty in distinguishing my patient from a distance. She was working with the other horses in a plow, and exceedingly lame in the near foreleg. When we had approached near enough to observe the exact condition of the animal, I found her to be a bay mare weighing 1,300 lbs., aged 11 years, of the ordinary farm type. Upon examination I found the following pathological conditions. Both flexor tendons very much contracted, so much so that upon digital manipulation they felt as hard as bone, there was complete fibrous ankylosis of the upper pastern and all the phalanges. The pastern was at an angle of about 45 degrees, inclined in a backward direction, the hoof resting on the toe (complete volar flexion). During progression the mare landed on the point of the toe, then rolled over on to the anterior part of the fetlock, wearing away the skin, the part had been fortified by the formation of a horny pad. I censured the owner for committing such a flagrant act of cruelty. He thought there was no particular harm done by working her, as she could get about the pasture field without apparently suffering any pain. I considered the case altogether too bad and complicated for successful treatment, so advised her destruction. The owner thought it a great waste of valuable horseflesh to destroy her without at least trying to do something to alleviate the trouble and pressed me to operate, anything I might suggest so long as it

*Presented at the Annual Meeting of the Veterinary Association of Manitoba, Winnipeg Feb. 16, 1909.

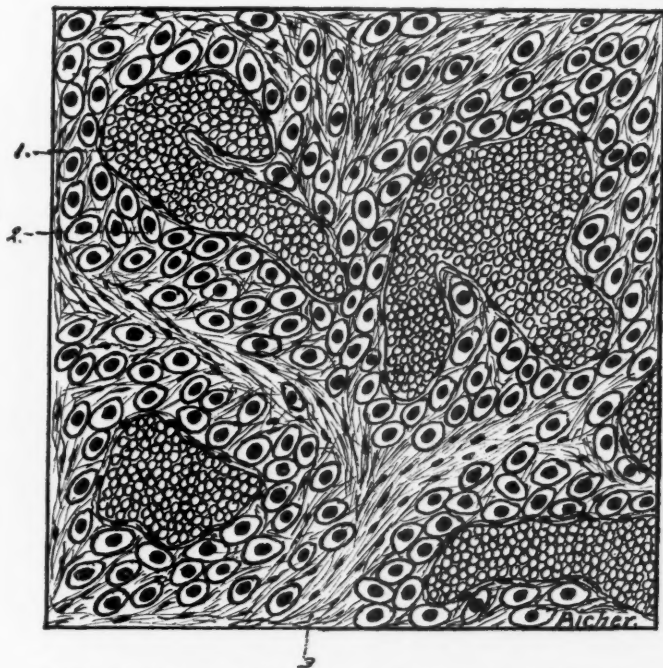
was an operation. I outlined to him what appeared to me the only operation worth considering. He accepted and agreed to run all risk incurred. The mare was sent into my hospital, and prepared for operation. I decided to first sever the perforans tendon and note the result. After shaving off the hair and rendering the part aseptic, a tenotomy knife was inserted and the tendon severed in the usual manner, the result was nil. I then reinserted the knife and severed the perforatus, but the cut ends of the tendons did not separate. Forcible extension was next resorted to, which caused the adhesions between the tendons and their sheaths to give way. We now had a gap of about two inches between the cut ends of the tendons, but the mare still walked on the anterior wall surface of the hoof and fetlock. No amount of extension and exercise would increase the space between the cut ends of tendons. This was continued for three days without improvement. I now decided to endeavor to break down the adhesions which had immobilized the fetlock and phalanges. The mare was placed on the operating table, chloroform anesthesia produced, two wooden splints were firmly strapped to the leg, extending from the elbow and forearm down to the distal extremity of the metacarpal bone, and the limb securely fastened to the table. A rope was tied around the hoof, brought back on the median plane of the sole and through, and then tied to a loop in the end of a piece of iron which had been welded on to the shoe. This piece of iron, about eight inches in length, made a powerful lever. When all was ready I stationed myself in a suitable position, where I was enabled to manipulate the parts, while the combined efforts of three men steadily pulling on the rope steadily caused the adhesions to gradually give way. The pull was continued with less force, until the foot could be taken well forward in extension, a few slight lateral adhesions that remained were broken down by grasping the foot with my hands and twisting it in either direction. The sounds emitted during the stretching and snapping of the adventitious tissues resembled very much the cracking and breaking of dry sticks. When the effects of the anesthetic had passed away, we were gratified to find that my patient could put weight on the limb, although very lame. The after treatment consisted of cold water bandages. She was exercised for fifteen minutes at a time three times a day. A spur three inches in length was welded on the toe of the shoe, this spur was slightly turned up at the point. The object of the

spur was to prevent the mare from elevating the heels and standing on the toe. There was not at any time any swelling. The mare steadily improved, and in two weeks she left the hospital and was conveyed home in a wagon. I saw her last month and was surprised to find that she had been working for three months perfectly sound.

HÆMENDOTHELIOMA—BRAIN OF HORSE.

By B. F. KAUPP, B.S., D.V.S., Pathologist, Veterinary Department, Colorado Agricultural College.

Endothelioma of the brain is not supposed to be common in the horse. The cells forming the new growth arise from the



HÆMENDOLTHELIOMA; CHOROID PLEXUS—HORSE.

1. Blood vessel filled with cells.
2. Concentric rows of Endothelial cells.
3. Connective Tissue.

endothelial cells of the serous membrane or from vessels. Keene divides endotheliomata into four kinds, as follows: 1—Hæmendothelioma arising from blood vessels. 2—Lymphendothelioma

from lymph vessels. 3—Perithelioma from cellular overgrowth of the perivascular sheaths of the small vessels. 4—Dura-endothelioma from the membranes of the brain and spinal cord. The latter are often called psammoma, or so-called sand tumors. These contain patches filtrated with lime salts. The one here described and illustrated belongs to the first class. According to the classification given by Delafield and Prudden those originating from the endothelial cells of blood vessels are called hemangio-endothelioma, those from lymph vessels lymphendothelioma.

In the human pia-arachnoid endotheliomata are reported. The new growth is usually roundish in outline and from the meninges penetrates the brain substance by means of fibrous bands projecting inward from the pia mater. The writer has made a study of one of this kind. The cerebellum from a boy seventeen years old was sent to the laboratory for diagnosis, with the history of dullness, some days fever, and again normal. Finally weak and unable to move, the patient became confined to his bed. Toward the last came spells of inability to breathe. No pain or other functional disturbance was complained of by the patient. Respirations ceased for a considerable time before the heart finally stopped beating. The attending physician had made a diagnosis of pressure on the floor of the fourth ventricle over the respiratory centre, probably due to new growth. The diagnosis was right. A new growth involving the roof of the fourth ventricle the size of a pea was found. Upon section it was found to be of a similar variety of endotheliomata as the one here described in the horse.

Endothelioma are recorded as having their origin in the brain substance. Some of these tumors somewhat resemble certain forms of epithelioma and have often been described as primary carcinomata. The characters vary. Sometimes a tumor is formed of densely packed masses of flattened cells with little fibrous stroma. Sometimes it is lobulated with considerable dense stroma in narrow or broad bands. Some are formed of cuboidal cells grouped around blood vessels. Again they may be packed in dense masses either around a central mass or blood vessel.

The subject of this report was a black gelding, perhaps twenty years old and destroyed for dissection purposes. Upon opening the right lateral ventricle, while demonstrating the various parts of the brain, a new growth, whitish in color and about the size of a pea was observed. Upon close examination it was

found to involve a choroid plexus. The neoplasm was preserved and sectioned. A study of the sections revealed the fact that it was a hæmendothelioma. The accompanying drawing is from a field showing the grouping of endothelial cells around the blood vessels.

AN EQUINE HERMAPHRODITE.*

By Dr. S. P. SMITH, Cando, N. D.

The subject to be considered was a foal, being the offspring of a draft stallion and an Indian pony.

May 20, 1903, the owner of this unnatural animal came to me for advice, stating that he had a foal twenty-four hours old which had no visible urinary tract, presenting only a fullness of the skin at the normal location of the vulva. I advised him to make an incision through the skin at the ischial arch, which he did and informed me later that there was a protrusion of flesh through the lips of the incision and it was able to micturate, passing urine through the superior commissure of the incision, which gave it immediate relief.

I concluded that the protruding tissue was only an eversion of the inflamed clitoris and would disappear of its own accord.

The animal was lost sight of until June 10, 1906, when the owner informed me that it had become unmanageable showing the instinct of both male and female.

I made a clinical examination of this animal and found the following abnormal conditions to exist. Two well-developed testicles in their respective external inguinal rings, absence of scrotum with well-developed mammary glands and an excess smegma accumulated along the medium line of the udder. Posteriorly the corpora cavernosa of the penis projected several inches through the inferior commissure of the unnatural vulva, the urethra and superior portion of the organ were absent as well as the clitoris. The urethra was the same as that of normal female except for its thickened walls and increased length. The general appearance of this animal was that of a male.

June 20, this animal was cast for operation and after the inguinal regions were thoroughly disinfected, an incision was

* Read before a Meeting of the North Dakota Veterinary Association.

made through the skin about three inches posterior to the external inguinal ring, breaking down the subcutaneous tissues with the fingers, exposing the testicle which was removed with the emasculator after which the other was likewise dealt with. From a microscopical examination they were normal in morphology and their histological structure.

The posterior parts being disinfected, the protruding corpora cavernosa was dissected back close to its origin, and a portion about ten inches in length was amputated, ligating the convoluted blood vessels. The dissection of this tissue left a pocket which was lanced at its base to perfect temporary drainage for the wound secretion.

These wounds were dressed daily with a 5 per cent. solution of lysol and iodoform boracic acid dressing or dusting powder.

Granulation took place very rapidly and after sixteen days the wounds were entirely healed and the animal turned to pasture.

A month later this animal was found dead in pasture; an examination revealed that death was caused by a stroke of lightning; this gave me a chance to make a complete examination of the remaining generative organs. The vagina, uterus and fallopian tubes were normal. The ovaries were in the normal position, but rudimentary and very hard in texture. The severed ends of the vas deferens and spermatic cord lay close to the internal inguinal ring. The vas deferens taking their natural course inflected posteriorly above the bladder and beneath the vagina until they reached the urethra beneath the rudimentary prostate gland and vesiculæ seminales, joining the urethra just anterior to its passing through the vaginal wall.

There being no perceptible pathological lesions present or abnormalities of the rest of the organs of the body indicating that the animal had made a complete recovery from the operation.

ANTITETANIC SERUM IN LARGE DOSES.

By J. ELMER RYDER, D.V.S., Professor of Clinical Medicine, New York—American Veterinary College.

Chestnut mare, eight years old, fourteen hands two inches high, weight 850 pounds. Was called on Thursday, February

25, 1909; history as follows: While riding on Sunday, February 14, mare struck her off fore quarter, causing a wound about three-quarters of an inch long and a half-inch deep; this wound did well and at this time cicatrization was about complete, but showed considerable soreness upon pressure.

Symptoms—Temperature 104, pulse 68 (small), respiration 60, head elevated, nose extended, trismus of the muscles of the face and cheeks, protrusion of the membrana nictitans upon the least excitement, entire body stiff and rigid, standing with hind legs wide apart and tail elevated and trembling, when moved did so with difficulty and as a solid piece. Diagnosis—Tetanus. Diagnosis confirmed by Drs. Grenside and Bretherton.

Treatment—February 25, 5 p. m., injected 60 c.c. antitetanic serum. February 26, 8 a. m., all general symptoms improved seventy-five per cent., temperature 101, pulse 48, respiration 28, was down four hours during the night and ate three quarts of steamed oats and bran for breakfast. Injected 30 c.c. antitetanic serum; 4 p. m., general symptoms still improving, temperature 104, pulse 48, respiration 20, ate two quarts for lunch. Injected 30 c.c. antitetanic serum; 6 p. m., all symptoms good, but mare very dull, head dropped, eyes partly closed, no excitement. February 27, 8 a. m., temperature, pulse and respiration normal, all general symptoms good. 12 noon, mare apparently well. Injected 30 c.c. antitetanic serum; 4 p. m., with the exception of extreme dullness mare seemed perfectly well. February 28, noon, all symptoms normal and general condition good. Injected 15 c.c. antitetanic serum. March 1, normal, no treatment. March 2, half an hour walking exercise. March 3, one hour walking exercise. This exercise was continued until March 11, when she was returned to regular work.

This is the fourth case of tetanus that I have treated with antitetanic serum in large doses, repeating them as often as the symptoms demanded, and the third recovery. The point upon which the successful result of treatment depends is, I believe, the largeness of the doses used. In the average size horse the first injection should be from 90 to 120 c.c. and repeated in six hours if necessary.

RAPID RECOVERY FOLLOWING OPERATION OF LITHOTOMY.

By Dr. E. S. FRY, Veterinarian, Naperville, Ill.

On December 28, 1908, I was called to see a gray Percheron gelding coming two years old this spring. The owner called my attention to the fact that during the greater part of the summer of 1908 and ever since, the colt's legs were continuously wet. At the above-mentioned date his legs were scaly, due to irritation of the urine.

Urine was dripping at time of my visit and upon making a rectal examination I found a calculus at the neck of the bladder.

Surgical removal was the treatment recommended and the operation was to be performed as soon as the weather was favorable.

January 12, 1909, was the date of operation. Means of control—twitch and side line. Local anesthesia was used on skin over seat of operation.

A catheter was inserted into the urethra. An incision about two and one-half inches long was made through skin and different tissues a little to the side of the median line. The next incision was made a little to the opposite side of the median line through urethra on to catheter. The catheter was then withdrawn to the bottom of wound in urethra and calculus, which was $5 \times 4\frac{1}{2}$ inches in circumference, was removed with forceps.

The catheter was then pushed up into the neck of bladder and urethra stitched over catheter with carbolyzed catgut. The outer wound was stitched with silk.

Antiseptic treatment was applied to the external wound three times daily, which healed by first intention.

Following the operation there was no constitutional disturbances; no loss of appetite; no swelling over seat of operation and animal seemed to suffer no inconvenience as a result of the operation.

The animal urinated through the normal channel and never once through the incised wound.

RECOVERY FROM SECOND ATTACK OF TETANUS.

By ALFRED F. BOLLINGER, D.V.S., Brooklyn, N. Y.

Early in January I was called to see Kismuth S., a sorrel pacer, owned by Mr. D., of Blythburne, 23 years old, being foaled in 1886, and found him suffering from tetanus; the dis-

ease being well marked. Informed owner, who in turn informed me that this was his second attack. This horse made his mark in '93. Shortly after, when eight years of age, he picked up a nail, and developed lockjaw. He was successfully treated by Dr. Sheppard of Sheepshead Bay. My treatment of the second attack consisted of carbolic acid and iodine, each 5 drops in water $\frac{5}{ii}$ hypodermically once a day. Sodium bromide in drinking water; treatment continued for fifteen days, recovery complete in twenty days. I neglected to state, the germ gained access through a wound on inside of lower lip, which was entirely healed at time of my first visit.

"DID your husband ever bet on a winning horse?" "Oh, yes," answered young Mrs. Torkins. "All the horses Charley bets on win at some time or another."—(*Washington Star*.)

MICHIGAN AND MARYLAND RELEASED FROM FOOT-AND-MOUTH DISEASE QUARANTINE.—The federal quarantine on account of foot-and-mouth disease has been entirely removed from the states of Michigan and Maryland, no cases of the disease having been found in those states since early in December. The quarantine on certain portions of New York and Pennsylvania remains in effect, but covers only the particular townships in which the disease existed together with certain adjoining townships. Live stock, hides, skins, hoofs, etc., may be moved interstate from the quarantined portions of New York and Pennsylvania, however, upon certain conditions with the permission of the United States Department of Agriculture.

PAN-AFRICAN VETERINARY CONFERENCE.—The recent South African Veterinary Conference at Pretoria in the Transvaal was attended by delegates from all parts of the sub-continent, even Madagascar and the Congo. The conference lasted for three days and the scope and character of the deliberations of the delegates give unmistakable evidence of organization and able leadership. United action on the part of all the colonies in the matter of the extermination of animal scourges, which have handicapped South Africa for years, is the policy determined upon. Lengthy and interesting accounts of the conference and its doings appear in the *Rand Daily Mail*, Johannesburg, January 13, 14 and 15, 1909, and in *The Transvaal Leader* of January 16, 1909.

ARMY VETERINARY DEPARTMENT.

THE U. S. ARMY VETERINARY BILL DEAD.

As predicted in the last issue of the AMERICAN VETERINARY REVIEW, the bill "To increase the efficiency of the Veterinary Service of the U. S. Army," has failed to pass the House of Representatives. This means the death of a veterinary bill which was launched in good unison by the veterinarians of the army in 1904; which was afterwards altered by the General Staff, U. S. A., to fit the military opinion of the time, and which was fostered as an official bill of the War Department. Unfortunately, the bill, as it emerged from the offices in Washington, soon aroused the antagonism of the younger veterinarians by apparently favoring the older veterinarians with over fifteen years of service and by an "eliminating clause" applying also to those younger veterinarians who may have failed of reappointment, provisions which threatened to disrupt the good feeling previously existing among all army veterinarians.

For four years the pages of this journal have been filled with opinions for and against this bill, and for the sake of peace and unity among ourselves, which we need more than anything else for our progress in the army, we shall abstain from further reviewing the features of this bill or the causes of its final failure. The most prominent point about it now is that it has robbed us of four years of legitimate professional development which would have taken place had this bill been promptly enacted into law in 1904 or 1905, as it should have been.

Brushing aside the unpleasant recollections of this dead bill, we must at once look ahead for some better proposition, one that will compensate us for the time lost. There can be no doubt that the army veterinary service, in spite of the obstacles encountered in our present official status, has steadily improved to a higher plan of usefulness, little as this may be known outside of the army where only complaints from us have been heard. We may frankly admit that we still have a few older or younger men among us who have preferred to go on along the path

of the old army veterinary routine, but with the infusion of new blood into our ranks new standards have developed, which have been noticed in the line of the army for some years past and are now also known to the War Department at Washington.

With this fact we can count in our new endeavors at legislation. We need no longer be bashful lest we may offend the feeling of the army by a claim or claims for a respectable army veterinary service, which shall be what it is intended to be: An economical army department, with corresponding rank and emoluments of the veterinarians holding commissions therein. If signs are true, such institution is in view. The Army Reorganization Board, meeting at Washington, has asked and received opinions and recommendations for the improvement of the veterinary service from various sources throughout the army, and while little has transpired of the result of the deliberations of this Board, or what it is likely to be, enough is known to entertain hopes that a real improvement in the veterinary service is contemplated by the War Department along with the other changes in the organization of the different branches of the army. All army veterinarians have been given a chance to have their properly indorsed recommendations officially forwarded through the hands of Dr. Walter Fraser, Fort Myer, Va., or by other channels, and while it was impossible from lack of time to reach an agreement among ourselves as regards the pertinent points to be recommended, yet some very excellent suggestions from veterinarians and interested army officers, particularly one from Capt. Cameron, 4th Cavalry, Assistant Commandant of the Cavalry School at Fort Riley, Kansas, have been promptly put before this Board.

From what is so far known, it seems appropriate and wise that we should identify ourselves with this new move in a watchful and prudent attitude. From the lessons just learned by the failure of the old bill, we should refrain from seeking personal favors for a few in the way of exemption from irksome examinations or other obligations likely to be imposed upon us by the new bill, realizing as we should that in order to gain a more responsible military position, we shall have to make a corresponding sacrifice in our present unrestricted and uncontrolled position that has so far exempted us from the periodical proof of our continued professional ability, as is the case with all other

army officers. To conclude, we can do nothing better at present than try to help this new bill along the right path by a broad-minded conception of our professional duties and obligations whenever we should have further opportunity to enlighten our military authorities on the so far ill-understood veterinary branch of our army.

OLOF SCHWARZKOPF.

INFECTIOUS ANEMIA OR SWAMP FEVER OF HORSES.—After much investigation by the Bureau of Animal Industry of the United States Department of Agriculture the cause of infectious anemia or swamp fever of horses has been definitely determined as an invisible virus which is capable of passing through the pores of the finest porcelain filter, like virus of yellow fever, hog cholera, and similar diseases. The disease is found to be most prevalent in low-lying and badly drained sections of the country, although it has been found in altitudes as high as 7,500 feet, on marshy pastures during wet seasons. It is also more prevalent in wet seasons than in dry ones, and usually makes its appearance in June and increases in frequency until October.

From experiments conducted by the Bureau it appears that the disease is more or less prevalent in Minnesota, Kansas, Nebraska, Colorado, Wyoming, Montana, North Dakota, and Texas. It begins to manifest itself by a dull, listless appearance and general weakness, the animal tiring easily, this stage being followed closely by a staggering, swaying, uncertain gait, the hindlegs being mostly affected. The temperature remains high for several days and then drops, to rise again at irregular intervals. The horse may improve for a time, but usually this temporary improvement is followed by a more severe attack than at first. The quantity of urine passed is sometimes enormous, death finally occurring from exhaustion. If uncomplicated, the infection runs a chronic course, and usually terminates fatally in from two months to a much longer period. Veterinarians in different sections report a mortality of 75 per cent. or even higher. Recovery takes place only when treatment is begun early or when the animal has a long convalescent period.

The REVIEW for November, 1908, Vol. XXXIV., page 198, contains an article by Dr. John R. Mohler, of the Bureau, describing the disease and giving treatment.

ABSTRACTS FROM EXCHANGES.

ENGLISH REVIEW.

By Prof. A. LIAUTARD, M.D., V.M.

VESICAL CALCULUS IN A JACK [*Lieut. H. C. Stewart, A. V. C.*].—For the past three months, or more, the animal has been treated for retention of urine. Finally, he is laid up; is in a very debilitated condition, passed urine occasionally in drops, cloudy and blood-tinged. Temperature and respiration are normal. Catheter introduced in the urethra revealed a calculus obstructing the cervical portion of the bladder, about three-quarters of a hand's length from the anus. Operation is decided. The mule was cast, chloroformed and aseptic precautions taken. At first the animal was put on his back, but as it proved difficult to pass the catheter round the ischial arch, he then was laid on his left side and easily the instrument went in until it reached the stone. An incision was made in the perineal region with the catheter in the urethra, the incision enlarged and the calculus removed with a pair of bullet forceps. Egg-shaped, very rough, hard and apparently composed of oxalate of lime, it weighed about two ounces. The bladder was washed with boric acid and the incision closed with Lembert's sutures. Recovery was uneventful.—(*Veter. Reco.*)

VOMITING IN THE HORSE [*J. H. Parker*].—Bay gelding 17 years old, was taken three years before with vomiting that lasted one hour. During that year he had four more attacks. Then the spells became more frequent and after the last he had double pneumonia, from which he died. At the post-mortem it was found that the vomiting was due to a dilatation of the œsophagus situated close to the stomach. The walls of the œsophagus on one side was much dilated and the thickness of the organ much reduced.—(*Ibid.*)

TWIST OF THE INTESTINE: A FAMILY HISTORY [*H. Taylor, F. R. C. V. S.*].—Concise record of the case of bay mare that had colic and looked as if she was going to die; and which

she did after an illness of twenty hours' duration. The post-mortem revealed an interesting torsion. Her mother and grandmother, said the driver, had died of a similar attack and after presenting the same symptoms. It is worth noting to trace a family weakness so far back.—(*Ibidem.*)

CASE OF OBSTRUCTION IN THE GULLET OF A MARE [*Augustine Lopez, G. B. V. C.*].—Fine mare, 4 years old, in foal, is brought to a horseshow, has been classed and is standing, waiting to be judged. At that moment she was feeding on a liberal supply of grain. Suddenly she is taken with choking. Saliva flows from the mouth, countenance is anxious, and she makes violent expelling efforts by coughing. Oil is administered and returned immediately by the nostrils. An ordinary whalebone cattle probang is introduced, and, notwithstanding it is pushed in several times, no good results follow. Finally, a gum elastic catheter with a stylet being obtained and used, by turning it in gently three or four times, some little particles of the grain were made loose and removed and gradually the animal was relieved and able to compete for the prize which she carried off.—(*Veter. Record.*)

FRACTURE OF THE PELVIS [*Henry B. Eve, M. R. C. V. S.*].—Recently bought, this six-year-old mare is taken with strangles, is treated and recovered. One morning she is found cast in the box where she was let loose. She is unable to rise and has to be helped up. Apparently none the worse for her accident she is put in harness, driven a little distance and suddenly becomes dead lame. Brought to her stable, she drops down and is unable to rise. She is in great pain. With great difficulty she is put on her feet. She is very lame on the off hind leg, unable to carry weight on it. It is shorter than the other. Manipulations cause great pains and on tying a cord round the foot to assist in the extension of the leg, the mare knuckled over at the fetlock and nearly fell down. She stands with both hind feet wide apart, with the toes turned outwards. Rectal examination revealed nothing definite and no crepitation was detected. The regions of the hip joint and stifle were much swollen. Diagnosis of severe injury of the hip joint with probably complications of fracture of the acetabulum was made. Local treatment and no slings as the place was unsuitable. The mare was destroyed. Post-mortem: Severe injury of the ligamentum teres and fracture right through the symphysis pubis with displacement.—(*Veter. Record.*)

INTERESTING CASE OF HERNIA IN A MARE [Mr. T. Powell, M. R. C. V., and Prof. Hobday, F. R. C. V. S.].—The photo of a mare, well-bred poney, which had had a foal. The ventral hernia was enormous and the illustration shows that it protruded on both sides of the posterior part of the abdomen. Attempt at reduction was made, but the extent of the lesions was such that it was decided to have the mare destroyed.—(*Veter. Journ.*)

MULTIPLE INTESTINAL CALCULI [C. Roberts, M. R. C. V. S.].—Aged gelding has not shown signs of illness, when he was taken with colic and died. At the post-mortem, the end of the double colon was found to be packed with oat-hair calculi varying in size from that of a marble to that of an ordinary orange. There were counted 873 of them.—(*Ibidem.*)

SOME CASTRATIONS [Licut. A. J. Thompson, A. V. C.].—Five ponies were operated. In three, ligatures had to be applied to arrest secondary hemorrhage. All were operated with knife and actual cautery. All the cases had a raise of temperature about the end of the first week. Ligatured cases were less favorable than the others. The ponies resumed work at the end of the fortnight following the operation.—(*Ibidem.*)

TUMOR-LIKE GROWTH RESULTING FROM FAULTY DEVELOPMENT OF THE PETROUS TEMPORAL BONE IN A HORSE: SUCCESSFUL REMOVAL [H. Caulton Reeks, F. R. C. V. S.].—While attending to the stock on a farm, the author noticed a yearling filly whose head had a peculiar shape, having a growth at the base of the right ear. The owner said that it was there at birth and that by veterinary advice it had been left alone. It has grown, and is soft and fluctuating in its upper half while the lower part of it, rather movable, feels like cartilage. An exploring trocar inserted gave out more than two pints of thick, glairy deep yellow-colored fluid. Following the escape of the fluid, the skin of the upper portion of the tumor collapsed into a saucer-shaped concavity formed by the lower part, which, being hard, had to be removed. The animal was cast, adrenalin and eucaine used for local anesthetics. An incision on the skin of the upper surface of the tumor let the fluid, which had accumulated again, escape and the interior of the saucer-shaped

concavity was exposed and at its bottom were noticed the labyrinth of the ear, the snake-like convolutions of the cochlea being readily apparent. The osseous covering of the internal ear was totally wanting and the membranous portion of the labyrinth only had been developed. Anyhow, the skin was carefully dissected from round the saucer-shaped lower half of the tumor and steps taken to remove it. But as it was not cartilage, as suspected, but real bone, and as it was quite movable, its removal required a great deal of care for fear of injuring the contents of the unprotected ear. However, in using cartilage knife, bone forceps, and fine saw the growth was reduced sufficiently to leave the parts sufficiently closed and forming about the normal contour of the head. The flaps of the skin were cut to adapt themselves to the new condition of the region, powdered boric acid was used as dressing and the wound closed with interrupted sutures. With the exception of a temporary small unhealed depression which required a short attention, recovery was exempt of any special event.—(*Journ. of Comp. Pathol. and Ther.*)

DIGESTIVE POWERS OF THE OSTRICH [*R. J. Stordy, M. R. C. V. S.*].—This is a record. One-year-old bird, in poor condition, has been ill for some time, and finally died. At the post-mortem, at first in opening the glandular stomach (proventriculus) several brass cartridges fell out. On more careful examination and after opening the gizzard, there were found from both compartments 111 brass cartridge cases and two bullets. Many of the cartridges were worn to the size of a pea, in four only the detonators were left, while others had been but recently swallowed. It is not probable that death was due to the presence of those foreign bodies as the animal had fed well up to the time of death.—(*Journ. of Comp. Pathol. and Therap.*)

CASE OF ANTHRAX IN AN OSTRICH [*W. Robertson, M. R. C. V. S., Gov. V. Bact.*].—It has been generally supposed that ostriches, like other birds, had under natural condition immunity for anthrax. It seems not. Seven ostriches had been under observation for seven weeks. The place where they were kept was clean and no anthrax had occurred in the place for fourteen years. All the birds were feeding well. One afternoon one was noticed to be lying on the ground, quite dead, with

the head and neck twisted back over the body. Post-mortem: Blood quite fluid. Intestines congested from end to end. Mucous membranes congested with hemorrhagic areas. Spleen much enlarged. Microscopic examination of the blood show bacilli identical morphologically and by staining characteristic with those of anthrax.—(*Journ. of Comp. Pathol. and Therap.*)

FRENCH REVIEW.

By Prof. A. LIAUTARD, M.D., V.M.

CONTRACTION OF THE ŒSOPHAGUS DUE TO AN ABSCESS CLOSE TO THE CARDIA IN A COW [*Mr. Bitard*].—A six-year-old cow has slight tympanitis, loss of rumination, fair appetite, but painful deglutition. She is treated by an empiric. She gets worse. Deglutition is very painful, although the appetite is always very good; liquids are swallowed without difficulty. Is treated with mucilaginous drinks, honey and camphor, without results. She remains in that condition for a few days. Exploration of the throat and pharynx is negative and a catheter is introduced in the œsophagus. It goes in well until towards near the cardia when it is stopped and notwithstanding rather hard pressure it cannot be made to go farther. A smaller ball is then put in the end of the probang, as the one which is there is rather big, and after a third trial the instrument is pushed in through. However, the condition did not improve. Loud intermittent roaring developed, true violent efforts for vomiting took place and were followed by the throwing up of glairy and alimentary substance. Finally, as the cow was in good condition she was sent to the butcher. At the post-mortem, there was found an abscess back of the diaphragm at some distance from the insertion of the cardia, containing half a cup of yellowish pus without any special odor. The cause of this abscess could not be made out.—(*Prog. Vcter.*)

TORSION OF THE UTERUS IN A MARE [*Mr. Magneron, Jr.*].—Mare, 6 years of age, is far advanced in pregnancy. The normal time has expired since a few days. She has violent pains, makes powerful efforts. Vaginal exploration reveals a

torsion of the uterus. The vaginal folds run from right to left. It is a complete torsion, as it is impossible to introduce the finger in the folds so as to reach the foetus. The classical treatment of rolling the animal in the sense of the torsion, to the left, is resorted to and notwithstanding great difficulty after a first turn, the arm of the operator felt less compression in the vagina. At the second turn the torsion was removed and after a short time delivery took place without further trouble.—(*Rev. Veter.*)

LOCKJAW FOLLOWING BITES OF A TIGER: RECOVERY [*Mr. Bergeon*].—At a hunting party in Indo-China, while running a deer, the hounds found themselves in the presence of a tiger. In a few seconds, four of them were killed by the feline, and the fifth, bitten on the neck, was saved only by the cries of an indigent hunter who frightened the beast away. The injured dog had only a deep muscular wound of the neck and was suffering with paralysis of the forelegs, which suggested that a lesion of the spinal cord of the cervical region existed. The wound was dressed with permanganate of potash 1/1000. The dog was made as comfortable as possible and fed with milk and soup. He seemed to improve, but after a few days he was taken with complete opisthotonos. The case looked bad and a fatal prognosis was given. Nevertheless, the dog continued to lap his milk. No special treatment was prescribed. The wound gradually healed, the general condition improved and although the convalescence was long the animal made a complete recovery.—(*Rev. Veter.*)

PREMATURE FECUNDATION IN A FIVE-MONTHS-OLD HEIFER [*Mr. Janeteau*].—While going to the public watering-place, a heifer aged five months and twenty days was mounted by a bull and become pregnant. Fearing accidents at the time of parturition, she was made to abort by receiving when about two months gone a drench of wine with 10 grammes of Ergot and 40 of powdered gentian. This drench we repeated four times. The result was abortion without complications.—(*Ibidem.*)

VAGINAL GESTATION [*Mr. A. Lescure*].—This cow has had several gestations, all very regular. She is now seven months gone. One morning she is found with the water bag protruding from the vulva and yet she has shown no colic, made no expulsive efforts and she has no evidence of being a victim of trau-

matic injuries; she is about to abort. Yet fragments of the envelopes are issuing from the vulva. Exploring the vagina, the hand detects at some centimetres from the vulva, a puffy mass, slightly fluctuating, containing hard and movable substances. It is a small foetus surrounded with its envelopes, which is readily extracted. Continuing the exploration the uterine neck is found closed, as in the non-gravid uterus, and projecting in the vagina allowing the introduction of the finger and without any foetus in the cavity. The one extracted has the characters and normal development of a four months' calf. He has macerated in the amniotic fluid, remaining surrounded by the intact envelopes. Rejecting the supposition that the case was one of abortion, the author asks if it was one of real vaginal gestation, with grafting of the egg on the vaginal mucous, with normal development of the embryo up to four months, when the foetus had died, remaining three months more, when his abnormal presence being no longer supported by the vagina, the symptoms of abortion took place.—(*Rev. de Medec. Veter.*)

LAMENESS FORWARD DUE TO UNSUSPECTED FRACTURE OF VERTEBRAE [*Mr. Trintignan, Army Veterinarian*].—A tumor as big as the fist of a man is on the left side of the withers of a mare. Exploration shows pus. The abscess is evacuated of half a litre of thick creamy pus. There exists deep necrosis with purulent infiltrations. The trapezium and the mastoido-humeral muscles are freely divided. But new fistulas are formed, notwithstanding continuous antiseptic irrigations. The mare is killed. On each side of the withers there are fistulas and abscesses running under the scapula. There is a large piece of the ligamentum nuchæ necrosed and a consolidated fracture of the spinous process of the first dorsal vertebra. The callus extends to the second vertebra.—(*Rec. de Medec. Vete. Milit. and Jour. de Zoot.*)

RARE CASE OF FRACTURE OF THE ASTRAGALUS [*By the same*].—While practising jumping over hurdles, a mare slips, makes a violent effort to save herself and can scarcely make a few steps forward. The left hind leg is slightly flexed and rests on the ground only by the toe. No crepitation is detected. There is a depression on the inside of the hock, the tibio-tarsal joint seems to have been badly sprained with rupture of the ligaments. The mare is destroyed. Œdematous swelling and hemorrhagic infiltrations are surrounding the joint. The lateral

ligaments on the inside of the hock are lacerated. The astragalus is broken into seven irregular pieces of various size and form. It has been literally crushed. The internal malleolus of the tibia is also fractured.—(*Ibidem.*)

OVERLOADED INTESTINES FOLLOWED BY RUPTURE OF THE FLOATING COLON [*Mr. O. Comte, Army Veterinarian*].—One morning this horse was suffering with colic. His look is anxious but his pains seem dull and not severe. He scrapes the floor with his forelegs now and then, looks to his flank, turns his upper lip upwards. There is slight tympanitis. Pulse is good. Soap injections, massage of the abdomen and pilocarpine are prescribed. However, the tympanitis increases and puncture of the cæcum is performed. The horse is bled, has mustard put on his abdomen, and soap injections continued. Colic remains dull, pulse still very good, but when the horse lays down he does it carefully, flexing his front legs and then slowly dropping on his hind quarters. Chloral, opium and ether give but little relief. The bowels have not moved. The animal dies during the night. At the post-mortem the abdominal cavity is found filled with fæces spread all over the intestines. All the organs are congested and on the initial portion of the floating colon are found two lacerations, eight and ten centimetres long, both surrounded with dark edges and hemorrhagic exudation. There are two others also, smaller, one about the same spot but nearer the large colon, and the other at the point of the cæcum.—(*Journ. de Zootech.*)

VOLUMINOUS EPULIS IN THE HORSE [*Mr. Lusscau*].—An aged heavy draught horse, very thin, has the right cheek much distended and from the commissure of the lips on that side there protrudes a smooth, rounded, red mass covered with mucosities. Buccal examination shows a very large tumor, occupying the entire internal face of the cheek, without adhering to it but with a wide peduncle and attached to the gum of the three first molars. It extends beyond the commissure and posteriorly reaches the posterior molars. Mastication is impossible. The amputation was made with a strong piece of wire, about one metre long, which was passed loop-like close to the gum, and surrounding the peduncle in such a manner as to embrace well the base of the growth. Drawing the wire partly out, the longest part of it was heated with a solder lamp and then pulled by the other end until part of the base was cut. Then this second

portion of the wire was heated, pulled out by the other end, and so on alternately until the section was complete. Then the base on the gum was cauterized. The animal did well. Unfortunately, died two months later and the author does not know if the growth returned or not.—(*Journ. de Zoot.*)

GENERALIZED GANGLIONARY TUBERCULOSIS IN A DOG [*Mr. L. Auger*].—The owner of this St. Germain dog wishes him to be destroyed, as he has two large goitres. Indeed, on each side of the larynx he carries a large painless tumor. But they form on each side a distinct mass which is situated a little above and also outside of the normal position of the thyroid gland. Besides, in front of the shoulders he has a tumor with the same characters, it is an adenitis of the prescapular glands. On each side of the penis the superficial inguinal glands and on the back of the hindlegs the popliteal glands are also hypertrophied. Palpation of the abdomen reveals the presence of several masses, there is no fever and the dog is not in bad condition. However, the owner wants him destroyed. At the post-mortem the sub-maxillary, retropharyngeal, parotid, prescapular, inguinal, popliteal, abdominal, tracheo-bronchal and sus-sternal glands were all more or less hypertrophied and in a state of caseification in various degrees. The lungs were comparatively free, having only two or three gray translucent tubercles. There were also some on the liver. All the other organs were normal.—(*Ibidem.*)

BELGIAN REVIEW.

By Prof. A. LIAUTARD, M.D., V.M.

UPON THE PENETRATION OF THE BACILLUS OF TUBERCULOSIS THROUGH THE INTESTINAL WALLS [*Mr. Hermans*].—This communication was made before the Academy of Medicine of Belgium.

In some conditions of experiments the tuberculosis bacilli always pass through the normal intestinal mucous of the guinea-pig.—100 of these animals (64 females and 36 males) received with the œsophageal probang, 3 centigrammes of fresh cultures in intimate emulsion with 5 c. c. of physiologic water. The ani-

mals had nothing to eat previous to the operation and the fasting was kept up after. Three weeks later three of the pigs died and presented bacilli in the mesenteric glands. One of the other pigs was lost. Of the 96 remaining which were submitted to the test of tuberculin, 90 reacted. All the females that were pregnant at the time of the tuberculation, aborted of fetuses more or less developed or had premature delivery of living little ones. One year after the absorption of the culture all the animals, except one, had died with generalized tuberculosis. Liver, spleen and lungs, stomach and kidneys were all found diseased. The intestines affected to less extent in 28 cases. The last living animal was finally killed and exhibited tuberculous lesions of the intestines, liver and spleen.

In all the cases, the mesenteric lymphatic glands had tuberculous lesions and in the very rare cases where these could not be detected, frosts of their substance revealed tuberculous bacilli under the microscope. The little pigs, born during the experiment were also examined and lesions containing tubercular bacilli were found in the liver of two twins. Conclusions: 1st—In normal guinea pigs with empty stomach, humane tuberculous bacilli given in emulsion with physiologic water, always pass through the intestinal walls and reach the corresponding mesenteric glands. 2d—The penetration may take place on the small or large intestines, but does not seem to occur through the mucous of the stomach. 3d—The bacilli invade the organism and multiply in the liver, spleen and lungs and occasionally, though later, may produce intestinal lesions. 4th—Tuberculin is a powerful abortive with pregnant and tuberculous guinea pigs. 5th—The two cases of hereditary tuberculosis observed do not justify a conclusion as to this mode of propagation in man.—(*Bulletin Académ. de Medec. Belgiq.*)

CO-EXISTENCE OF RACHITISM IN SWINE AND BOVINES: A SYMPTOM LITTLE KNOWN OF RACHITISM AND OSTEOMALACIA IN BOVINES [*Prof. Lienaux*].—In a farm where either disease has not been known to exist for years, some thirty bovines are kept. Five two-year-old bulls have become lame at short intervals of time, towards the end of the winter and during the period of stabulation. The lameness exists in several legs, almost all have hard and painful swellings of the lower part of the forearm and occupying principally, the internal face of the region. Similar swellings are also found on the fore and hind

fetlocks, localized on the inferior extremity of the canon bones. While three of the animals are not very lame, one lays down altogether since several days and refuses to rise. When forced to get up, he is unable to stand, and at the point of the hocks one can feel a solution of continuity in the structure of the Tendo Achillis. There is a true desinsertion of the tendon, and as the animal is killed at once the tendon of the bifemoro-calcaneus is found loose from its insertion to the os calcis, while that of the perforatus still in place is only very thin and worn off. Another bull was also very lame and in a very bad condition. Having inquired as to the condition of the health of the pigs kept on the place, Prof. Lienaux found that two of them were sick and lame, having epiphysar enlargements and articular deformities. The other bulls and pigs were suffering with the same infection. Hygienic treatment and appropriate regime were prescribed. Three of the bulls improved. The fourth one, that was in such bad condition, broke down at the hock with the same desinsertion of the bifemoro-calcaneus, a symptom certainly known but to the presence of which attention has not been called sufficiently.—(*Annal. de Bruxel.*)

ACTINOMYCOSIS IN A HORSE—SUB-CUTANEOUS NODULES ON THE FACE.—SUB-GLOSSAL ADENOMA [*By the same*].—To have an enlarged sub-glossal gland removed this horse was brought to the writer. The gland is as big as two fists brought together. It is hard, fibrous, and has several openings from which escapes a little white pus. This condition has been diagnosed as a sequela of strangles. However, the horse carries besides, on the right half of the face a number of little tumors, varying in size from that of a pea to that of a hazel nut. They are sub-cutaneous, hard, elastic or exceptionally fluctuating. They do not adhere to the skin nor to the surrounding tissues. Some twenty in number, they are spread between the right eye and nostril alongside the veins of the region. One of them is incised and it shows in the centre some pus, white and creamy, and round it firm tissue with yellow granulations. The trouble is not glanders nor tuberculosis, there are no bacilli of Koch, none of glanders, no staphylococcus, streptococcus or bacilli of Preisz. Further examination revealed the nature, it is actinomycosis. The sub-glossal swelling is too large to expect its reduction with the Iodide treatment. It is removed. The

nodules of the face were open, cureted, cauterized and dressed with corrosive powder. Recovery.—(*Annals de Belg.*)

CONTRIBUTION TO THE TREATMENT OF TETANUS IN BOVINES [*Charles Tyvaert*].—The interesting record of recoveries from tetanus in two cows, one following a punctured wound of the foot and the other without apparent traumatic cause. Both animals recovered; the first in 21 days and the second in 7. The treatment was as follows: Quietness in a dark stall. Food consisting of bran and common salt. Puncture of the rumen with the trocar left in place for a length of time varying according to the condition of the animal. Feeding through the rumen with funnel. Medical treatment consisted in infusion of pulverized gentian root with sulphate of soda, naphthaline, nitrate of potash and chloral hydrate.—(*Annals. de Belg.*)

THE TRUTH.—“See here. That horse you sold me runs away, kicks, bites, strikes and tries to tear down the stable at night. You told me that if I got him once I wouldn’t part with him for \$1,000.”

“Well, you won’t.”—(*Lutheran Observer.*)

AN UNPARDONABLE OFFENSE.—Miss Smart Set—What has become of Celestine, your maid? Mrs. De Smythe—I had to discharge her. She had no proper consideration for my poor Fido. Miss Smart Set—Why, I always thought she took exceptional care of the pet. Mrs. De Smythe—So did I till I found she was using her own comb on his hair without first sterilizing it.—(*London Telegraph.*)

MODERN REQUIREMENTS.—“Have you thrown the cow into the antiseptic tank?”

“Yes.”

“Have you washed the can with carbolic acid solution?”

“I have.”

“Have you plunged into the germ-destroying bath, yourself?”

“Certainly.”

“All right. Go ahead now and take the cow into the airtight glass cage, but keep on the lookout that no stray bacteria gets into the milk.”—(*Bohemian.*)

OBITUARY.

SIDNEY L. HUNTER, V. S.

With deep sorrow we chronicle the sad death of our late associate and esteemed friend, Dr. Sidney L. Hunter, 2d Field Artillery, U. S. Army. His death occurred at San Diego, California, on the 27th day of February, 1908, where he was spending the winter upon sick leave, which was granted him on account of his poor health resulting from Bright's disease, from which he has been a sufferer for a number of years. His death, though sudden, was not unexpected to those who knew him and were aware of his condition.

Dr. Hunter was born March 13, 1858, at Hector, Schuyler County, New York, was educated in the public schools of Watkins, N. Y., and taught school for a number of years, and entered the Ontario Veterinary College in October, 1885, and was graduated in March, 1887, after which he practised in Bath, New York, until August, 1890, he was appointed to the Quartermasters' Department of the U. S. Army and sent to Fort Leavenworth, Kansas, where he held the position of Assistant Instructor in Hippology at the Infantry and Cavalry School, where he served until July, 1900, when he passed the Army examination for appointment to the regular service, standing first in the list of candidates appointed at that time. After appointment, he was sent to the Philippines, where he served six months and was ordered back to Leavenworth as an instructor in the Infantry and Cavalry School (now school of the line) and also placed upon the Army examining board to examine candidates for the Army, upon which board he served a number of years. He filled the position of instructor in the service school at Fort Leavenworth, Kas., up to the time of his death. He was an honorary graduate of the Kansas City Veterinary College and has been an instructor of this college for the past ten years, going from his station at Fort Leavenworth once or twice weekly to give his lectures at the school; member of the American Veterinary Medical Association; member of the Masonic Order, and in the latter he had received the work to the

32d degree, and was appointed and served two years as District Deputy Grand Master, but was forced to resign this office on account of failing health.

In appreciation of the esteem in which he was held at the Service School of Fort Leavenworth, all duties were suspended on the day of his funeral and the officers on duty at the school attended in a body, and Company "E," 13th Infantry, fired a salute at the grave and the band of the 13th Infantry led the procession. So he was given full military honors at his burial, and in addition the members of Hancock Masonic Lodge of Fort Leavenworth (No. 311) took charge of the funeral services and buried him according to the rites of the order.

In his death the profession loses one of its ablest men and one we can ill afford to spare.

He was a devoted husband and kindest of fathers and his death is a severe blow to his family, which consists of a wife and two daughters, named Mildred and Mae; and I believe that I can speak for the profession who knew him in extending our heartfelt sympathy to his bereaved family.

I believe that to Dr. Hunter the profession in the Army owes a great debt, since through his kindly manners, zeal and ability he has done so much to lift it to a higher level in the eyes of all officers who have come in contact with him throughout his long service.

C. H. J.

CORRESPONDENCE.

VETERINARIANS DECAPITATED.

SANTIAGO DE LAS VEGAS, March 14, 1909.

EDITORS AMERICAN VETERINARY REVIEW:

The new Cuban administration has taken its official *machete* and decapitated every American employee in the Department of Agriculture, among whom is your obedient servant. No suggestion of inefficiency was made.

Yours sincerely,

N. S. MAYO.

SOCIETY MEETINGS.

MICHIGAN STATE VETERINARY MEDICAL ASSOCIATION.

The twenty-seventh annual meeting was called to order by the President, Dr. T. G. Duff, at 1 p. m., February 2, 1909, at Hotel Downey, Lansing.

Minutes of last meeting were read and, upon motion, were duly approved.

It was moved and supported that the regular order of business be suspended for one hour, and that Rev. Jerome, of Hillsdale, an officer of the Anti-Tuberculosis Society of Michigan, and also in the National Association, be requested to address the Association.

Rev. Jerome then spoke, and gave a talk that was very much appreciated by our members. He urged the necessity of proper legal protection for the veterinarian, not only from a personal view, but as a protection to the public, especially so, as qualified veterinarians were needed to assist in eradicating tuberculosis by stamping it out in the lower animals. Mr. Jerome said that their local societies had interested themselves in the proposed amendment to the veterinary law, and had taken steps protesting its passage. He submitted the following copy of a petition that was sent to some members of the State Legislature:

“ Hillsdale, Mich., February 1, 1909.

“ Hon. L. WHITNEY WATKINS, Senator, Tenth District;

“ Hon. R. W. REYNOLDS, Representative, Hillsdale County, Lansing, Mich. :

“ GENTLEMEN—Recognizing the close relationship that must exist between veterinary practice and the general practice of medicine as applying particularly in the present and future to the prevention and eradication of tuberculosis, it is deemed a proper matter for attention and action on the part of the anti-tuberculosis organizations, local and state.

"We, therefore, members of the Hillsdale County Association for the Study and Prevention of Tuberculosis, do hereby protest against the amendment now before the Michigan Legislature, extending the time for registration of non-graduate veterinary practitioners from January 1, 1908, to January 1, 1910, being an amendment of section 4, act 244, Public Action of 1907.

"We hope you will thoroughly look into this matter, in the belief that if you do, your conclusion will coincide with the view above expressed. In that event, we trust your influence and votes will be against the proposed amendment."

Moved and supported that a hearty vote of thanks be extended to Mr. Jerome for his pleasing address, and to his society for their practical interest in the educated veterinarian. Carried.

Resuming the regular order of business, President Duff gave his address. He spoke of veterinary conditions, and said from his viewpoint there had not been much change. Foot-and-mouth disease had invaded our state, and would receive proper notice by our Committee on Diseases. Among the recommendations Dr. Duff made were the following:

That the office of Treasurer be made a separate office, as it would give us one more active officer.

That nominations for offices be referred to the Executive Committee.

That a delegate be appointed to represent our Association at the A. V. M. A. meeting.

He said that it was evident that the question of a summer meeting would be compelled to lay over for another year, as the American meeting was to be in Chicago next fall, and all Michigan veterinarians should attend. He spoke of the death of Drs. McBeth and Carr, and ordered that suitable action be taken thereon by the Committee on Resolutions.

As Prof. Marshall was unable to be present at the evening session, he was permitted to submit his portion of the report of the Committee on Diseases at this hour. The professor spoke on the latest developments in hog cholera, experimentation, and gave an interesting account of their experience with vaccination during the past year. Some of the results were most gratifying, others were the opposite. It is still in the initial stage, and it will be some time before all obstacles are surmounted.

Hon. C. A. Tyler, Secretary of the State Live Stock Sanitary Commission, also spoke along these lines, and gave his experience with the serum treatment, pro and con.

Correspondence was read from Governor Warner, Board of Trade, Saginaw, Dr. James Harrison, and other absent members, the AMERICAN VETERINARY REVIEW, and others.

Upon motion, invitation from Saginaw Board of Trade to hold our next meeting in Saginaw was referred to the Executive Committee.

Dr. Jas. Harrison, of Delhart, Texas, formerly of Maple Rapids, sent in his resignation. Dr. Harrison, being clear on the books of the Association, upon motion, resignation was accepted.

It was suggested that, as Dr. Jas. Harrison had been, while in Michigan, one of our most enthusiastic members and an ex-president, that he be made an honorary member of this Association. President referred matter to the Executive Committee.

The following gentlemen made application for membership, which were referred to the Executive Committee:

Dr. A. E. Joslyn, Pontiac. O. V. C., 1899. Vouchers, H. H. Clement and G. W. Dumphy.

Dr. Theodore Frederick Krey, Detroit. N. Y. Am., 1905, and O. V. C., 1904. Vouchers, Judson Black and S. Brenton.

Dr. L. M. Hurt, E. Lansing. Iowa State V. C., 1904. Vouchers, Judson Black and Thos. G. Duff.

Dr. Ward Giltner, E. Lansing. N. Y. State V. C., 1906. Vouchers, H. M. Gohn and R. W. McDonald.

Dr. R. Armstrong, Detroit. Det. Col. Med., V. Dept., 1897. Vouchers, J. Hawkins and F. G. Gilbank.

Dr. Chas. N. Nye, Coopersville. Det. Col. Med., V. Dept., 1897. Vouchers, J. Black and H. M. Gohn.

Dr. C. C. Shaffer, Linden. O. V. C., 1908. Vouchers, G. C. Moody and W. H. Erwin.

Dr. Thos. McAllister, Kinde. O. V. C., 1908. Vouchers, W. A. Ewalt and D. G. Sutherland.

Dr. Edward Graham Folsom, Mt. Clemens, O. V. C., 1908. Vouchers, W. A. Ewalt and Judson Black.

Dr. Jas. E. Joslin, Williamston. O. V. C., 1908. Vouchers, Geo. C. Moody and J. E. Ward.

Adjourned until 7.30 p. m.

7.30 p. m.—President Duff called the assembly to order and called for report of Executive Committee. The Secretary, speaking for the committee, reported as follows:

In regard to the question of the invitation to have our next meeting in Saginaw, after careful discussion it was recommended by the committee that the invitation be accepted.

In the matter of conferring honorary membership upon Dr. Jas. Harrison, of Delhart, Tex., it was thought it would establish an undesirable precedent, and it was therefore recommended that while we hold Dr. Harrison in highest esteem, we would recommend rejection of the proposition.

It was recommended that the following gentlemen whose applications were referred to our committee be accepted as members: Drs. A. E. Joslyn, Theodore Frederick Krey, L. M. Hurt, Ward Giltner, R. Armstrong, Chas. N. Nye, C. C. Shaffer, Thos. McAllister, and Edward Graham Folsom, and the application of Jas. E. Joslin be laid over for one year.

Moved and supported that the report of Executive Committee be received. Carried.

Moved and supported that Dr. A. E. Joslyn's application be laid on the table until to-morrow. Carried. The rules were suspended and the following were elected to membership collectively: Drs. Krey, Nye, Giltner, Hurt and Armstrong, and it was so declared by the President.

Election of officers now being in order, it was, upon motion, decided to refer the nomination of the officers to the Executive Committee.

After a session of the Executive Committee they recommended that the following names be placed in nomination for the respective officers:

For President, Drs. Robertson, Muir and George D. Gibson. For First Vice-President, Dr. D. G. Sutherland. For Second Vice-President, Dr. W. H. Erwin. For Third Vice-President, Drs. W. L. Brenton and Bellinger. For Secretary and Treasurer, Dr. Judson Black.

Moved and supported that recommendations of committee be adopted and the gentlemen named be the nominees for the respective offices. Carried.

Election was proceeded with. President appointed tellers; ballot was cast for President, with the following result: whole number votes cast, 36, of which Dr. Muir got 29, Dr. Gibson 7. Dr. Muir was declared elected.

As there was only one nominee for the office of First Vice-President, it was moved and supported that the rules be suspended and the teller cast the vote for the Association for Dr.

D. G. Sutherland. Carried. This was done, and Dr. Sutherland was declared elected.

The same method was adopted for the Second Vice-President, and Dr. W. H. Erwin was declared elected.

Ballot was cast for candidates for Third Vice-President, with the following result: whole number of votes cast, 34, of which Dr. W. L. Brenton received 24 and Dr. Hal. L. Bellinger 10. Dr. Brenton was declared elected.

Moved and supported that there being only one nominee for Secretary and Treasurer, that the rules be suspended and that Dr. J. Black receive the vote of the Association. Dr. Black was then declared elected.

The same proceeding was adopted in case of each director, and the following were declared elected:

First Director—Dr. S. Brenton, Detroit.

Second Director—Dr. Hal. L. Bellinger, Plainwell.

Third Director—Dr. Geo. D. Gibson, Adrian.

Fourth Director—Dr. A. M. Kircher, Lansing.

Fifth Director—Dr. H. M. Gohn, St. Johns.

Sixth Director—Dr. F. G. Gilbank, Detroit.

Report of Committee on Diseases was made by Dr. Z. Veldhuis (read by Secretary), on general topics covered by his investigation. Dr. H. E. States, member of committee, gave a very comprehensive, entertaining and instructive account of the recent outbreak of the foot-and-mouth disease in Michigan, and a very good history and description of the disease. Dr. Ward Giltner, M. A. C., topic was "Contagious Abortion," and he gave a historical research in connection with the troublesome disease; also the treatment and prophylactic measures to be adopted.

Adjourned until Wednesday, February 3, 9 a. m.

February 3, 9.30 a. m.—Meeting called to order by President Duff. Dr. G. C. Sutherland, on behalf of Dr. S. Brenton and the other living members of the Association, presented to the Association a beautiful silver bound and engraved gavel. Dr. Sutherland spoke of the few members that had passed on, and of the few that remained of the small band that organized the M. S. V. M. A. in Detroit in 1883.

Dr. Duff, in acknowledgment of the receipt of this beautiful remembrance from our senior members, thanked them for the emblem of authority and hoped that it would be always wielded in the cause of honor and right.

REPORT OF COMMITTEE ON INTELLIGENCE AND EDUCATION.

Dr. Joplin, Chairman, made a general report, reading letters from Drs. Dumphy and E. A. A. Grange. He reported the conditions of the college remained unchanged since the last report.

Moved and supported that report be received and placed on file. Carried.

COMMITTEE ON FINANCE.

Dr. Cummings reported for committee that the books, vouchers, reports, etc., of Secretary and Treasurer had been audited and everything found was correct, and with a balance of \$244.80 on hand, as reported by Secretary.

Moved and supported that report be received and filed. Carried.

Moved and supported that the bill of Roethke Floral Co., of \$12 for Dr. W. F. Carr's funeral, be allowed and paid by Treasurer. Carried.

COMMITTEE ON RESOLUTIONS.

Drs. Deadman, Blatchford and Consaul—Dr. Deadman, Chairman, submitted the following resolutions:

"Whereas, It has pleased Almighty God to remove from our midst two of our most valued members, Dr. McBeth, of Battle Creek, and Dr. W. F. Carr, of Bay City,

"Resolved, That in their death the Michigan State Veterinary Medical Association recognize a loss of two of their most valuable and distinguished members, who zealously upheld the dignity of the profession and whose general nature endeared them to all who had the pleasure of their acquaintance;

"Resolved, That the Association extend to the bereaved families our heartfelt sympathy; be it further

"Resolved, That a copy of these resolutions be spread upon the records of this Association and a copy sent to the bereaved families.

"JOHN DEADMAN,

(Signed) "F. M. BLATCHFORD,

"F. M. CONSAUL,

"Committee."

Moved and supported resolution be adopted. Carried.

February 3, 1 p. m.—Mr. A. C. Anderson, Secretary of the Michigan Improved Live Stock Association, who was invited to be present at the meeting of our Association, spoke of the close relationship existing between his and our associations, and extended an invitation for us to join in their meeting at any time it is deemed advisable and assured the members of the M. S. V. M. A. a welcome at their meeting at any time.

Dr. Black, speaking for the members of our Association, reciprocated by extending the good will of the M. S. V. M. A. and advised a closer relationship with the Breeders' Association, and also stated that the date of our Saginaw meeting would be fixed so as not to conflict with the Breeders' annual meeting.

Moved and supported that Dr. A. E. Joslyn's application be taken up again. Carried.

Moved and supported that Dr. A. E. Joslyn's application be accepted and that he be elected to membership. Carried.

Dr. Joslyn was declared elected to membership.

Moved and supported that we elect a delegate to represent our Association at the A. V. M. A. in Chicago, and that the Association pay his hotel bills while in attendance. Carried.

Moved and supported that Dr. T. G. Duff be elected as such delegate. Carried.

Moved and supported that a selection of names to present to the Governor, from which he may select or choose a state veterinarian, be left to the Executive Committee. Motion lost.

Moved and supported that the following names be sent to the Governor, as the choice of Association, in the order named: Drs. G. W. Dumphy, H. M. Gohn, J. C. Whitney and Joseph Hawkins. Carried. Upon the suggestion of Dr. Dumphy it was, upon motion, decided that an invitation be sent to the A. V. M. A. to hold their meeting in Detroit in 1910. It was moved and supported that Art. IV., Chapter II., be changed to read "\$50" instead of "\$25." As notice of this was given at our last meeting it was carried.

The resolution to amend Art. II., Chapter VI., was laid on the table.

Dr. Gohn offered the following amendment to our by-laws, in writing: That Art. I., Chapter VII., be amended by inserting after the word "Association" in line 7, the following words, "who has been duly registered."

Dr. Gohn spoke on the subject of prosecution of illegal practitioners. It was deemed advisable to first see that our law was not mutilated by the present Legislature before any rule be adopted for prosecution.

It was moved and supported that the Executive Committee be authorized to act with the State Board in assisting in prosecutions. Carried.

Moved and supported that if funds be depleted, a special assessment be made upon the members under the direction of the Executive Committee. Carried.

Dr. S. Brenton, President, and T. F. Krey, Secretary of the Ontario Veterinary College Alumni Association, spoke, describing the aims and objects of the association.

Dr. D. S. Krull's paper on operation for Scrotal Hernia was a good, practical description of the various methods of operating. The covered operation with the wooden clamp was the one adopted by the doctor.

Moved and supported that the Secretary be allowed \$25 in addition to his salary for extra work last year. Carried.

Moved and supported that the bill to regulate stallions, discussed by Dr. Hurt, be referred to the Legislative Committee and the Committee on Diseases. Carried.

Moved and supported that the Secretary be instructed to to notify the Governor of the action of this Association in selecting names to be sent to him from which he is to appoint a state veterinarian. Carried.

Dr. Duff, before handing over the new gavel to his successor, Dr. R. Muir, thanked the Association for their support and assistance to him while President.

Dr. Muir, in a few words, thanked the members for their appreciation of his efforts as a member, and the honor that they had conferred upon him by electing him to the office of President of the M. S. V. M. A.

Moved and supported that Dr. Duff be extended a vote of thanks for his efforts in behalf of the Association while President. Carried.

President Muir announced the following standing committees:

Intelligence and Education—Dr. J. C. Whitney, Hillsdale; Dr. R. F. Irwin, Alma; Dr. T. F. Krey, Detroit.

Diseases—Dr. Ward Giltner, M. A. C.; Dr. W. J. Johnson, Paw Paw; Dr. Geo. D. Gibson, Adrian.

Legislation and College—Dr. C. A. Waldron, Tecumseh; Dr. A. M. Kircher, Lansing; Dr. H. M. Gohn, St. Johns; Dr. Geo. C. Moody, Mason.

Finance—Dr. L. F. Baldock, Birmingham; Dr. W. A. Ewalt, New Haven; Dr. F. M. Blatchford, Brighton.

Clinics—Dr. T. G. Duff, St. Louis; Dr. D. G. Sutherland, Saginaw; Dr. G. H. Carter, Saginaw; Dr. Dan. Hisey, Saginaw.

Press—Dr. John Russell, Elsie; Dr. H. T. Cregan, Decatur; Dr. F. Duncan, Ithaca.

Adjournment.

JUDSON BLACK,
Secretary.

MISSOURI VALLEY VETERINARY ASSOCIATION.

The semi-annual meeting was called to order at 9.45 a. m. in the New Casino, Kansas City, Mo., February 2, 1909, by First Vice-President Dr. D. M. Campbell. Dr. S. Stewart was asked to give to the organization a message from the Secretary-Treasurer, Dr. B. F. Kaupp, explaining his inability to attend. On motion of Dr. Peters it was voted to send Dr. Kaupp a message of sympathy and hope for a favorable outcome of the treatment he was undergoing. (Dr. Kaupp accidentally injured his hand while holding an autopsy on one of his experimental rabbits dead of rabies.)

The office of the Secretary for the session was filled by the election of Dr. R. F. Bourne.

On motion of Dr. Peters, reading of the minutes was dispensed with, since previous publication in the Bulletin had brought the proceedings of the Omaha meeting before the Association.

Reading of correspondence included the reading of messages from President J. I. Gibson and Secretary B. F. Kaupp of their inability to be present.

The places of absentees on the Board of Censors were filled by the appointment of Drs. Hal Simpson, A. T. Kinsley and Paul Juckniess.

The reading of papers was next taken up. Dr. A. T. Kinsley presented a paper entitled "Inflammation," which was discussed in a spirited manner by Drs. Stewart, Luckey, Jensen, Vincent, and Kinsley.

Dr. H. Jensen was then called to the chair while Dr. D. M. Campbell presented his paper on "The Treatment of Acute Inflammatory Conditions." This paper excited considerable interest and was discussed by Drs. Kinsley, Connaway, Smith, Knisely, Peters, Simpson, Warren, Lovell, Lyman, and S. Stewart.

The Association adjourned for luncheon at 12 m. and re-assembled at 1.30 p. m.

A report of the Board of Censors was called for and the following gentlemen whom they reported as favorably acted upon were elected to membership: Dr. B. H. Meinershagen, Missouri; Dr. W. I. Randall, Nebraska; Dr. Ray B. Hurd, Idaho; Dr. W. H. Saylor, Colorado; Dr. Geo. F. Jungerman, Kansas; Dr. R. R. Dykstra, Iowa; Dr. Benj. F. Davis, Wyoming.

Reading of papers was resumed and Dr. R. P. Lyman presented an interesting paper on "Equine Colics,"* which was discussed by Drs. Warren, Knisely, S. L. Stewart, and others.

Under report of interesting cases in practice, Dr. W. Warren recited two experiences, which were discussed freely by several members.

Dr. D. F. Luckey next spoke of the present status of the Missouri Veterinary practice law and gave his ideas as to the outlook for the future in the direction of legislation. Drs. D. O. Knisely and H. Jensen were asked to give a similar outline of conditions in their respective states, Kansas and Nebraska.

"Hog Cholera Control and Eradication" was the subject of an address by Dr. J. W. Connaway. His methods and others brought up numerous questions and discussions from members.

The following papers on account of the absence of their writers were read by the Secretary:

Report of an interesting case by Dr. B. J. Baker. "Some Results of Recent Scientific Investigations," by Dr. B. F. Kaupp; "Infectious Ulceration of the Teats of Cows," by Dr. E. L. Luaces.

These papers were discussed at some length, as were the subjects of "Tetanus and Fistula," by Drs. Warren, Slater, Biart, and S. A. Peck.

The Association adjourned at 5.30 p. m. to meet in the Banquet Hall of the Coates House at 7.00 p. m.

*Published in March REVIEW, Page 730.

Shortly after 7.00 p. m. over one hundred guests, including members, their wives, and others, assembled in the banquet hall. The dinner and the speeches which followed constituted the most enjoyable feature of the meeting.

Dr. S. Stewart acted as toastmaster. Addresses upon various phases of food and milk inspection were made by Drs. S. L. Stewart, D. M. Campbell, Frank Hall, A. T. Peters, L. Champlain, and R. P. Lyman. Two members with encores from the K. C. V. C. quartet and solos by Messrs. J. M. Lawson and S. W. Alford were greatly appreciated and added the spice of variety to the evening's program.

At 10.00 a. m., February 3d, a demonstration of various dairy methods was given by Drs. S. L. Stewart and D. M. Campbell, at the Kansas City Veterinary College. Methods of testing milk for butter fat, water and preservatives and the operation of the cream separator, together with an exhibit of good and bad dairy products filled up the forenoon with interesting work. The apparatus for those demonstrations was very kindly furnished by the John Deere Plow Company.

After luncheon, served in the college building, the clinic claimed the attention of those in attendance. Dr. F. F. Brown, who had charge, presented the following cases for diagnosis and outline of treatment:

Case No. 1.—Dr. F. F. Brown, clinician. A well-built dapple-gray horse which had been treated for tetanus about a year previously; since then had difficulty in locomotion and trouble in getting up and down. There was pronounced stiffness in gait, and a side bone in right front foot was also observed. Case diagnosed as Gonitis. No medication was offered.

Case No. 2.—Dr. R. P. Lyman, clinician. This was a large gray mare, with the following history and symptoms: Animal lies down most of the time when not in the harness. When driving stumbles in gait. Left hind limb is abnormally flexed, giving appearance of stringhalt. A rectal examination revealed tumors at bifurcation of Iliac arteries. Diagnosed as compression of lumbo-sacral plexus by melanotic tumors. No medicine given.

Case No. 3.—Dr. W. Warren, of Sedalia, Mo., clinician, assisted by Messrs. McCartney, Hill and Vansell. A tenotomy operation for contraction of the flexor tendons. The toe rested on the ground, but heel was elevated, foot was drawn out of shape with evidence of soreness in the tendon sheath above the

carpal joint. The tendons were divided about two inches above the fetlock joint. A well-taken point in operations of this kind was to thoroughly wet the opposite limb, to avoid dust and other particles being thrown into the wound, during struggles of the animal.

Case No. 4.—Dr. Moore, clinician, assisted by Messrs. Hill, Vansell, Collette, and Dr. C. C. Kinsley. This was a very interesting surgical case—the removal of half of the cow's udder. There was a large necrotic area on left side, with some sloughing of skin, and right side hardened. Case was diagnosed as Necrotic Mammitis. In performing the operation, the mammary artery was ligated at point where it leaves the inguinal canal, thus avoiding excessive hemorrhage and the necessity of ligating the smaller branches of this artery.

Case No. 5.—Dr. A. T. Kinsley, clinician. This was a case of so-called "Swamp Fever," and brought out much discussion, and various remedies from the visiting veterinarians. The animal was a gray draft horse, four years old, was brought from a farm where he had been kept in a small pasture with some other horses, two of which had died from this disease. There have been periodic attacks of fever, going as high as 108 degrees, leaving the horse weak and anæmic. The blood on examination was thin and watery and showed lack of hæmoglobin.

The animal was first treated with one pint of linseed oil, in which was put one ounce of turpentine; this was administered daily, for several days, when the dose was doubled for some time; result of this treatment was the passing of quantities of worms. Animal had been receiving small doses of arsenic daily for the past month and seemed to be improving.

Dr. S. L. Stewart reported very good results from the use of Salol in a number of cases of this kind.

R. F. BOURNE,
Acting Secretary.

VETERINARY ASSOCIATION OF MANITOBA.

The annual meeting of this Association was held in the rooms of the Dominion Department of Agriculture, Winnipeg, on Tuesday, February 16, 1909.

The President, Dr. C. D. McGilvray, occupied the chair, and the following members were present: W. A. Dunbar, W.

Hilton, W. J. Hinman, W. E. Martin, J. D. McGillivray, M. B. Rombough, W. A. Shoults, F. Torrance, A. E. Williamson, T. F. F. Baker, J. B. Still, and P. A. Robinson, of Winnipeg; S. A. Coxe and S. Robinson, of Brandon; J. Welch, of Roland; W. R. Taylor and H. Bradshaw, of Portage la Prairie; J. Mack, of Neepawa; J. Golley, of Trehorne; J. H. Part, of Swan River; W. J. Cruikshank, of Deloraine; W. H. Smith, of Carman; J. A. Swanson, of Manitou; J. M. Young, of Rapid City; J. H. Lipsett, of Holland; J. Irwin, of Stonewall; L. McQueen, of Selkirk; and W. B. Stiver, of Elgin.

The reports of the auditors and treasurer showed the financial affairs of the Association to be in a healthy condition.

The registrar announced that during the year the following new members had been admitted after passing the required examination:

W. H. T. Lee, of Minto, M. D. V., McKillop, '08; J. McDougall, of Kenton, M. D. V., McKillop, '08; J. A. Munn, of Carman, M. D. V., McKillop, '08; T. J. E. Rutledge, of Carberry, M. D. V., McKillop, '08; W. B. Still, of Neepawa, M. D. V., McKillop, '08.

The death, on February 29, 1908, of G. V. Rowcroft, of Birtle, was recorded with the deepest regret. He was a graduate of the Ontario Veterinary College, 1897, and an active member of the Association since 1898.

The return to Manitoba of one of the original members of the Association, T. F. F. Baker, after an absence of some eighteen years, was noted with pleasure. The membership is now one hundred and six.

The election of officers resulted as follows:

President—J. Welch, of Roland.

Vice-President—J. Irwin, of Stonewall.

Secretary-Treasurer and Registrar—F. Torrance, of Winnipeg.

Examiners—C. D. McGilvray, W. J. Hinman and F. Torrance.

Council—The above, and J. H. Lipsett and W. E. Martin.

The annual fee was fixed at two dollars, as heretofore.

In a few well-chosen words the retiring President, C. D. McGilvray, introduced the newly elected President, Dr. Welch, and the Vice-President, Dr. Irwin, to the meeting.

Dr. Welch thanked the meeting for the honor conferred on him. It came as a surprise to him, but he would use his best

endeavors in the interests of the Association and the profession. He suggested and hoped that another year, if all worked together to that end, they would be able to have a good clinic for the next annual meeting. It was one thing he would very much like to see, and there was no reason why they should not have it.

Dr. Irwin and Dr. Torrance also suitably responded for being elected to their respective positions.

On motion of Dr. Young, seconded by Dr. S. Robinson, a hearty vote of thanks was tendered to the retiring President, Dr. C. D. McGilvray.

Dr. McGilvray: "Fellow members of the Manitoba Veterinary Association—It affords me great pleasure in accepting the vote of thanks you have tendered me. I might say that from the time I have been associated with the members of this Association, I have always found that the greater number have always done all in their power to forward the interests of the profession. I think that in the gentleman who is succeeding me you may expect better results than you obtained from me."

Dr. Hinman: "I understand that the Ontario Veterinary College has now gone in for a three-year course; would the Registrar be good enough to inform us what graduates are allowed to practise under our regulations? I understand that the graduates of the Ontario Veterinary College are now eligible to do so, and would like to know from what other colleges graduates are eligible."

Dr. Torrance: "Under our Veterinary Association Act, the provisions require that candidates for registration shall be graduates of a recognized veterinary college, having a curriculum of not less than three sessions of six months each. None of our colleges since McGill went out of veterinary teaching have complied with that until recently. During the past year the Ontario Government made arrangements with Professor Andrew Smith whereby the Ontario Veterinary College became part of the Toronto University, and the curriculum was raised to three sessions. In future, graduates of this college will comply with our law, and there will be no question of their having to go elsewhere to enable them to comply with our regulations. As regards other colleges, there are a great number in the United States that give a sufficient qualification to their graduates to enable them to be registered here; in fact, only one or two colleges in the United States have less than a three-year curriculum, but as we have never had any application

from graduates of any of these colleges, we have never had the question raised. Under our act, it is left with the Manitoba Veterinary Association to recognize veterinary colleges, as we presume recognition means 'recognition by this Association.' Among the colleges hitherto recognized by us are the 'McKillop' and Chicago Veterinary Colleges, McGill, and the Ontario Veterinary College prior to 1898. In future we will recognize graduates from the Ontario Veterinary College who graduate in this or subsequent years."

On motion of Dr. Hinman, seconded by Dr. Golley, Drs. Taylor and Rombough were appointed auditors for the ensuing year.

There being no further business before the meeting, the Secretary read a paper sent in by Dr. F. J. Braund, of Boissevain, on "Azoturia." A brief discussion followed, in which Drs. Martin and Golley related their experience with various remedies in the treatment of the disease.

The meeting then adjourned until the evening, when a banquet was held in the Manitoba Hall, the Vice-President, Dr. Irwin, taking the chair in the absence of the President. Some twenty-five sat down, including, besides the members of the Association, the following inspectors of the Federal Meat Inspection Department—Drs. Bell, Ross, Cameron, Walsh, Snider, English and Shonyo.

After the good things had been disposed of, the chairman proposed the health of the King, which was duly honored, the company rising and singing "God Save the King."

Papers were then read by Dr. Martin on a case of Tenotomy;* by Dr. Dunbar on "Professional Etiquette"; by Dr. Cameron on "Opsonic Therapeutics";† by Dr. McGilvray on "Recent Advances in Veterinary Knowledge"; by Dr. Torrance on "Some Personal Experiences with Cases of Inguinal and Ventral Hernia."

Several of the papers elicited a lively discussion, and the members felt that the time had been well spent.

It was decided to hold the semi-annual meeting in Winnipeg, final arrangements to be left in the hands of the Council.

The meeting then adjourned.

F. TORRANCE,

Sec.-Treasurer and Registrar.

*Published in "Reports of Cases," page 59.

†See Original Articles, page 48.

ARKANSAS VETERINARY ASSOCIATION.

The second annual meeting of the above association was called to order by the President, Dr. V. J. Audre, on February 3, 1909.

Election of officers resulted as follows:

Dr. Audre re-elected President; Dr. W. A. Fry, Vice-President; Dr. H. E. Rice, Secretary-Treasurer.

The President appointed the following committees:

Legislation—Drs. E. S. Rice, W. Lenton, D. B. Morgan.

Arrangements—Drs. B. H. Merchant, H. C. Hoskins, A. C. Deaver.

Censors—Drs. W. A. Fry, R. L. Pryor, D. B. Morgan.

By-Laws—Drs. W. Lenton, H. E. Rice, R. R. Dinwiddie.

Governor Geo. W. Donaghey, who, in his message, advised the Legislature to pass a law regulating the practice of veterinary medicine, was elected an honorary member.

W. M. Rankin, State Humane Officer, the veterinarian's friend, was also elected an honorary member.

The Secretary presented the following communication from the Arkansas Humane Society:

"It is time that the public be taught that in order to be qualified for his work the veterinarian must first of all be well educated in one of our recognized colleges, and that it requires fully as much time, training and study to qualify in veterinary science as in human medicine; that the old 'hoss doctor' is no longer a representative of the profession, and must not be taken as an example of this class or as a type of a qualified veterinarian; that the veterinary profession has produced some of the greatest scientists the world has known; that an educated veterinarian is entitled to equal social standing with other professional men, none excepted; that it is quite as noble—and perhaps more noble—to be able to relieve the suffering dumb animal that cannot help itself and protect mankind from communicable diseases as it is to minister to human beings; that the world needs scientific veterinarians as well as physicians to protect the health and lives of both animals and humans."

A veterinary bill pending before the Legislature was endorsed by the Association, and our legislation committee instructed to use all honorable means to obtain its passage.

Upon motion, meeting adjourned.

HORACE E. RICE,
Secretary.

CONNECTICUT VETERINARY MEDICAL ASSOCIATION.

The annual meeting of the above association was held Tuesday, February 2, 1909, at Hotel Hartford, Hartford.

The meeting was called to order at 1.30 p. m. by Ex-President Dr. J. H. Kelley. Members present—Drs. Thos. Bland, H. E. Bates, Geo. T. Crowley, Chas. L. Colton, B. K. Dow, P. F. Finnigan, L. B. Judson, J. H. Kelley, P. T. Keeley, G. W. Loveland, H. Whitney, C. R. Witte and V. M. Knapp.

Minutes of the previous meeting were read and approved.

Reports of the Secretary and Treasurer were read and approved.

The Board of Censors reported favorably on the following applications: V. M. Knapp, D. V. M., Danbury; E. F. Schofield, V. S., Greenwich; F. D. Monell, V. S., Derby. It was voted to accept the report and elect the applicants to membership in the Association.

Officers were elected for the ensuing year as follows:

President—Dr. P. T. Keeley.

First Vice-President—Dr. F. F. Bushnell.

Second Vice-President—Dr. L. B. Judson.

Secretary—Dr. B. K. Dow.

Treasurer—Dr. H. Whitney.

Board of Censors—Dr. Thos. Bland, Chairman; Dr. G. W. Loveland, Dr. H. E. Bates, Dr. J. H. Kelley, Dr. G. T. Crowley.

Under the head of new business, Dr. Bland gave an interesting report of the annual meeting of the A. V. M. A., held at Philadelphia last September, making special mention of the cases of Epizootic Lymphangitis that were exhibited at the clinic. Dr. Bland's report resulted in an interesting discussion of the cases.

Drs. Keeley and Bland invited the Association to hold the semi-annual meeting in Waterbury, at Dr. Bland's hospital. The invitation, being very cordial, met with approval of the members present, but as there were several absent from various sections of the state, it was voted that the invitation be laid on the table for a few weeks or until the President could communicate with all the members and get their views as to time and place of next meeting, which is usually held the first Tuesday in August.

Meeting adjourned at 5.30 p. m.

B. K. Dow,
Secretary.

YORK COUNTY (PA.) VETERINARY MEDICAL SOCIETY.

The annual meeting of the above society was held on Tuesday afternoon, March 2, 1909, in the parlors of the National Hotel, York, Pa., with a large number of members from the city and county in attendance.

Election of officers resulted as follows:

President, Dr. H. E. Kline, York; First Vice-President, Dr. J. D. Smith, Dallastown; Second Vice-President, Dr. W. E. Craumer, Brodbeck's; Secretary, Dr. E. S. Bausticker, York; Treasurer, Dr. Charles Lenhart, Dover; Trustees, Drs. J. D. Smith, Dallastown; J. H. Hamme, York, and M. H. Gladfelter, Paradise; Censors, Drs. W. L. Herbert, E. S. Bausticker and J. H. Hamme, all of York.

Interesting papers were read on the following subjects: "The Recent Outbreak of Foot-and Mouth Disease in Pennsylvania," "Rabies in Cattle," "Osteo-Sarcoma in Cattle," and "Animal Tuberculosis."

Society adjourned to meet in June.

E. S. BAUSTICKER,

Secretary.

THE students of the San Francisco Veterinary College held their annual banquet at the Grand Central Hotel, San Francisco, Cal., on the evening of March 13th, the senior class being the guests of honor. The alumni association was represented by a large delegation. Dr. M. J. O'Rourke acted as toastmaster. At the conclusion of the banquet each member of the graduating class was presented with a handsome stein.

FOOT-AND-MOUTH DISEASE QUARANTINE REMOVED FROM NEW YORK AND MOST OF PENNSYLVANIA.—The Secretary of Agriculture has issued an order, which became effective March 26, 1909, releasing from the quarantine for foot-and-mouth disease the entire state of New York and all of Pennsylvania, except certain portions of Delaware and Lancaster counties, as follows: In Delaware county, the borough of Glen Olden; in Lancaster county, the townships of East Donegal, Rapho, Penn, Warwick, West Earl, Upper Leacock, East Lampeter, Manheim, East Hempfield, West Hempfield, Manor, Lancaster, Pequea, West Lampeter, Strasburg, Providence, Conestoga, Martic, Drumore, and the boroughs and the city of Lancaster.

NEWS AND ITEMS.

DR. L. T. LEWIS, of Gallatin, Tenn., reports the removal of a Champignon weighing 16 pounds and 4 ounces.

DR. C. G. VOLLMER, formerly of Kent, Ohio, has accepted a position as assistant to Dr. J. H. Blattenberg, of Lima, Ohio.

DRS. R. A. PHILLIPS and A. B. WARRENER, of Oklahoma City, have established a veterinary hospital at that place, and report prosperity.

THE date for holding the 46th annual meeting of the A. V. M. A. at Chicago has been changed from September 14-17 to September 7-10.

IT is said that Dr. Coleman Nockolds, veterinarian, 1st cavalry, is likely to become a benedict. He sailed for Hong Kong, February 1st.

DR. B. K. DOW, of Willimantic, Conn., has been giving a course of lectures on veterinary science, at the Connecticut Agricultural College, during the winter term.

EACH number of the REVIEW is anxiously looked forward to as it always contains so much interesting and instructive reading.—(*Walter R. Pick, Veterinarian, 1st Cavalry, Camp Stotsenburg, Pamp, P. I.*)

NEW YORK's champion speedway trotter, Invader, 2.10, has gone to the Canadian Northwest, having been purchased by Dr. W. J. Hinman, of Winnipeg, Manitoba, who will use the great trotter for amateur harness racing.

IT is with deep regret that the REVIEW announces the death of Dr. Sidney L. Hunter, of Fort Leavenworth, Kansas, one of the ablest veterinarians in the United States Army and an esteemed member of the A. V. M. A.

THE fifth annual banquet of the Veterinary Medical Society of the Iowa State College, given in honor of the alumni and graduating class, took place at The Chamberlain, Des Moines, Iowa, on Friday evening, March 12, 1909.

EDITORS AMERICAN VETERINARY REVIEW.—I wish to congratulate you on the excellent journal you are furnishing the profession. Every year sees a marked improvement over the one preceding.—(Dr. W. G. Clark, *Veterinarian, Marinette, Wis.*)

A. R. WARD, D. V. M., has just completed giving a special course in bacteriology and milk sanitation at the San Francisco Veterinary College. He leaves in a few days for Europe where he will study milk conditions and do research work in bacteriology.

THE Canadian government has removed from the state of Michigan its quarantine restrictions on account of foot-and-mouth disease, and that the British government will now permit the importation of animals from Michigan to Great Britain for slaughter.

GEORGE T. ANGELL, "the friend of animals," died at Boston, March 16th, aged 86 years. Mr. Angell had been for many years the leader in the humane educational movement in the United States and was the founder of the publication known as *Our Dumb Animals*.

T. WRIGGLESWORTH, V. S., Eau Claire, Wis., is now convalescent after having undergone an operation for the removal of a calculus from the left kidney. Dr. Wrigglesworth suffered untold agony before the operation and feels thankful for his restoration to good health.

GULIAN C. FAGAN, D. V. S., graduate of the American Veterinary College, class of 1889, died at his late residence, Katonah, N. Y., on Wednesday, March 17, 1909. Dr. Fagan was a resident of New York City at the time of his graduation, and practised there until recent years. He is survived by a widow and one child.

EDWARD J. YOUNG, V. S., graduate of the New York College of Veterinary Surgeons, class of 1891, died at Strafford, Pa., on February 6, 1909, just two days after the death of his brother, Dr. Thos. D. Young, of Media, Pa. This makes the sixth death in Pennsylvania of the registered veterinarians since the beginning of the new year.

At the regular monthly meeting of the B. A. I. Veterinary Inspectors' Association of Chicago, held on Friday evening, March 12th, Dr. J. M. Handley read a paper on recent parturition and presented a specimen of a uterus taken from a cow that had calved fourteen days previously. Drs. Paxon, Faunce and Giltner participated in the discussion of Dr. Handley's paper.

VETERINARIAN NARROWLY ESCAPES DEATH.—Hillsboro, March 1.—Less than one minute after a dozen laborers engaged in excavating for the new Durnell block had quit work for dinner to-day the north wall of the old Trimble building collapsed and the space they had occupied was covered with débris. Dr. S. R. Howard, veterinary surgeon, who had an office in the old building, narrowly escaped death.—(*Ohio State Journal, Columbus, March 2, 1909.*)

DR. W. H. DALRYMPLE'S recent lectures on "Diseases Common to Animal and Man," delivered at the medical department of Tulane University, have not only been endorsed in the highest terms by members of the medical faculty but evidently have made a favorable impression upon the public mind. Two of the leading daily newspapers of New Orleans published splendid editorials and gave lengthy reports of the lectures. This is work that tells for the profession.

It is said of E. J. (Lucky) Baldwin, noted horseman and multi-millionaire, who died recently at his home at Arcadia, California, that when he began business operations in California years ago that his rivals plotted against him and formed rings to beat him, but he defeated them at every turn and earned the sobriquet "Lucky," which he bore to the end of a long and eventful career. We are indebted to Dr. C. W. Barrett, City Veterinarian of Pasadena, Cal., for a picture of Mr. Baldwin and an interesting account of his remarkable and "lucky" life.

BANQUET OF THE ALUMNI ASSOCIATION OF THE NEW YORK-AMERICAN VETERINARY COLLEGE.—The Alumni Association of the New York-American Veterinary College (Veterinary Department of New York University), will hold its annual banquet at Reisenweber's, Fifty-eighth street and Columbus Circle (Eighth avenue), on Wednesday evening, April 14th. There will be a reception in the parlors from 7.30 to 8 p. m. and the dinner will begin promptly at eight o'clock. A splendid time is in anticipation, and it is hoped that every alumnus will lay aside

the cares of practice for a few hours and participate in it. Write the secretary, Dr. L. L. Glynn, No. 141 West Fifty-fourth street, New York, of your intention to attend, as it will materially aid him in perfecting his arrangements.

PROSECUTIONS IN PENNSYLVANIA.—During the month of March at Lancaster, Pennsylvania, prosecutions of W. M. Strayer resulted in a petition to the court for the conviction of a false statement made in 1891 under the Veterinary Practice Act. The court granted the petition and directed the prothonotary to make a record of the same.

In the same county I. Garber, of New Holland, and H. H. Kurtz, of Kinzers, plead guilty to violating the same acts and by agreement of counsel further prosecution was suspended on payment of all costs and the pledge of the offenders to in no way further violate the law.

Dr. H. A. Paget, of Scranton, has been placed under arrest and two bills found against him for failure to register under the act of 1905 in Pennsylvania.

John Jonas Johnson, of Philadelphia, plead guilty of violating the several laws regulating veterinary practice in Pennsylvania at the March term of court.

D. A. Brunsinger, of Reading, Pa., was recently convicted of practising veterinary dentistry in Pennsylvania contrary to the laws regulating the practice of veterinary medicine and surgery.

WHAT IS THE GOOD OF COMPARATIVE ANATOMY?—To understand our own bodies we have to explain them in terms of the structure of other animals, and many of our parts would be meaningless to us but for a knowledge of comparative anatomy. Our cankered vermiform appendix is represented in some animals by a large and serviceable attachment of the digestive tract, which explains it as a degenerate organ and therefore necessarily variable. Deep between the hemispheres of the brain is a little sac about the size of a pea, the pineal gland, and comparison shows that this was once a third eye. Sometimes an opening persists on the side of the neck below the jaw; in such a case one of the embryonic neck clefts has remained open, and this in turn has relations to the gill slits of a fish. All the ground plan of our bodies, the muscle cylinder within the skin, next the bony scaffolding, innermost the peritoneal sack around the viscera, all such relations would remain a mystery did we

study only the human body. But in the light of comparative anatomy and embryology we recognize them as necessary parts of our heritage. Medicine must stand upon a thorough knowledge of the structure and processes of the human body, and before it can treat disorders it must understand states of health and their origin. Comparative anatomists and embryologists, the great men Harvey, Wolff, Von Baer, Cuvier, Agassiz, Huxley, Cope, and Gegenbaur, such men have not only broadened the field of human thought, but have also furnished the understanding of the human organism. They were all pure scientists, they did not have in mind the care and cure of the human body. Yet we might say they accomplished more for a rational medicine than all the physicians before them. How unlikely the prophecy seemed that any direct advantage would come to mankind from the researches of Harvey, Wolff, and Von Baer on the development of the chick, from those of Cuvier and Agassiz on fossils, or from those of Huxley, Cope, and Gegenbaur on comparative anatomy. As the result of this change of thought we now see most medical schools prescribing biological courses, and choosing their professors of anatomy largely from the ranks of embryologists.—(*Popular Science Monthly*.)

THE ITHACA BANQUET.*—The sixth annual banquet of the Society of Comparative Medicine of the New York State Veterinary College at Cornell University was held at the Ithaca Hotel on the evening of February 26, 1909, and was pronounced by many to be the most successful affair ever attempted by the society.

Covers were laid for one hundred members and their friends and while the course of the menu were being served an orchestra furnished music. After the sumptuous dinner had been served, J. V. Townsend, '09, with a few well-chosen remarks welcomed the visitors to the banquet and introduced Dr. W. L. Williams as toastmaster for the evening.

The following responded to toasts: Dr. Hollingworth, of Utica; Dr. Berns, of Brooklyn; Dr. Kerr, of Cornell Medical College; Commissioner Pearson; and of the faculty, Drs. Udall, Taylor, Fish and Moore.

Deserving of special notice was the toast of Dr. Hollingworth on "Optimism,"† in which his sound advice won the

* Abstract from Banquet Report, New York State Veterinary College.

† Will appear in the May number of REVIEW.

praise of every one present. The maxims he set forth in reference to every-day honesty, and notably the attitude to be assumed in the home, of every practitioner, proved the character of the speaker.

Dr. Berns, who had just finished a very interesting course of lectures at the College, demonstrated in his toast the value of the teacher to the practitioner.

The banqueters were very enthusiastic over the interesting and convincing manner in which Commissioner Pearson explained "The Relation of Veterinary Science to Agriculture." His remarks tended to bring out the great need of the live stock owner for men well trained in sanitary science.

Letters were read from Dr. Ellis and Dr. Miller, both of New York City.

Among the visitors and alumni present were Dr. Clark, of Seneca Falls; Dr. Axtell, of Binghamton; Dr. Cady, of Buffalo; Dr. Wilder, of Akron; Dr. Kellogg, of Interlaken; and Drs. Kingsbury and Gage, of the Cornell Medical College.

Following are the students comprising the Banquet Committee:

F. E. McClelland, '09, Chairman; H. B. Risley, '09, Ex-Officio Member; J. V. Townsend, '09; C. A. Roig, '10; H. R. Millard, '11; F. S. Wood, '09; F. F. Koenig, '09; L. J. Benson, '09; C. R. Fairchild, '10; R. H. Mayberry, '11.

WESTERN CANADA NOTES.—At last the Saskatchewan veterinarians have an association with legal standing, this being authorized by Bill No. 7 of the Saskatchewan legislature of 1908-'09. The bill is much on the same lines as the bills legalizing the associations of the lawyers and medical men. It provides the usual penalties for those not qualified who shall practise illegally. Several items stand out in this act which show its modernity, (a) defining veterinary science, veterinary practice, and veterinary surgery as meaning, without restricting the general meaning of such words, and including the performance of any surgical or dental operation upon animals, the diagnosis of diseases of animals, and the prescribing or administering medicines for the cure of the same or for hire, gain or hope of reward. The itinerant veterinary quack, so-called, dentist, will thus be checked and his trail of damaged equine mouths and unsophisticated farmers' depleted pockets rendered more faint until he will become as extinct as the dodo; (b) election of the coun-

cil of seven is by ballot and no plumping permitted; (c) further the power to establish a veterinary college is not given, that prerogative being vested, as it should be, in the provincial university; (d) a reciprocity scheme is arranged for by the new act between the various provinces.

The registrar appointed pro tem. by the Lieutenant-Governor in Council is Dr. J. J. Murison, Arcola, Sask. It is expected that all the practitioners in the province will soon enroll and form the nucleus of a live professional body.

Dr. Chas. Head has returned to field work in Saskatchewan after three months' work patrolling the Canadian line from Toronto to Cornwall in connection with the foot-and-mouth outbreak in the United States.

Dr. Armstrong, Regina, has now a partner, Dr. Kemp, lately of Dubuc, Sask.

J. E. Littlehales, V. S., late of the Health of Animals Branch, is practising in Regina.

Married—On December 10, 1908, at the Methodist Parsonage, Moose Jaw, Sask., by the Rev. E. J. Chegwin, M. A., Edith A. Jones, eldest daughter of Geo. H. and Mrs. Sealy, Westhope, Sask., to Arthur G. Hopkins, B. Agr., D. V. M., in charge of Health of Animals Branch, Regina, Sask.

The Alberta Government's meat commission has issued a report, one recommendation of the commissioners being that a packing house (abattoir) for hogs be not established by the Government until the farmers can guarantee 50,000 hogs per year. Not a high mark to set according to Chicago standards! The legislature of that province has set aside \$50,000 against the likelihood of a packing house being called for.

The Horse Breeders' Enrollment Act will be enforced firmly this season is the announcement of the Department of Agriculture at Regina. All owners of stallions must enroll their horses before being allowed to go to the stud and charge fees.

A new bulletin is entitled "Sheep Husbandry in Canada," and may be obtained from the Live Stock Commissioner, Ottawa, Ont.

The agricultural members of the legislature were successful in having the operations of castration, spaying and dehorning exempt from the provisions of the Act to incorporate the veterinary profession in Saskatchewan.

A movement is on foot to raise a testimonial to Dr. Sweetapple, of Toronto.

FARM ANIMALS INCREASE.—The Crop Reporting Board of the Bureau of Statistics of the United States Department of Agriculture estimates, from reports of correspondents and agents of the bureau, the numbers and values of farm animals on farms and ranges in the United States are as follows:

Farm Animals.	Number.	Average price per head.	Total value.
Horses, 1909.....	20,640,000	\$95.64	\$1,974,052,000
Horses, 1908.....	19,922,000	93.41	1,867,530,000
Average, 1898-1907.....	.....	60.25	.....
Mules, 1909.....	4,053,000	107.84	437,082,000
Mules, 1908.....	3,869,000	107.76	416,939,000
Average, 1898-1907.....	.....	72.30	.....
Milch cows, 1909.....	21,720,000	32.36	702,945,000
Milch cows, 1908.....	21,194,000	30.67	650,057,000
Average, 1898-1907.....	.....	29.52	.....
Other cattle, 1909.....	49,379,000	17.49	863,754,000
Other cattle, 1908.....	50,073,000	16.89	845,938,000
Average, 1898-1907.....	.....	19.02	.....
Sheep, 1909.....	56,084,000	3.43	192,632,000
Sheep, 1908.....	54,631,000	3.88	211,736,000
Average, 1898-1907.....	.....	2.92	.....
Swine, 1909.....	54,147,000	6.55	354,794,000
Swine, 1908.....	56,084,000	6.05	339,030,000
Average, 1898-1907.....	.....	6.07	.....

Compared with January 1, 1908, the following changes are indicated: Horses have increased 648,000, mules increased 184,000, milch cows increased 526,000, other cattle decreased 694,000, sheep increased 1,453,000, swine decreased 1,937,000.

In average value per head horses increased \$2.23, mules increased 8c, milch cows increased \$1.69, other cattle increased 60c, sheep decreased 45c, swine increased 50c.

In total value horses increased \$106,522,000, mules increased \$20,143,000, milch cows increased \$52,888,000, other cattle increased \$17,816,000, sheep decreased \$19,104,000, swine increased \$15,764,000.

The total value of all animals enumerated above on January 1, 1909, was \$4,525,259,000, as compared with \$4,331,230,000 on January 1, 1908, an increase of \$194,029,000, or 4.5 per cent.

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VETERINARY MEDICAL ASSOCIATION MEETINGS.

In the accompanying table the data given is reported by many Secretaries as being of great value to their Associations, and it is to be regretted that some neglect to inform us of the dates and places of their meetings.

Secretaries are earnestly requested to see that their organizations are properly included in the following list :

Name of Organization.	Date of Next Meeting.	Place of Meeting.	Name and Address Secretary.
American V. M. Ass'n.....	Sept. 7-10, 1909.	Chicago.....	R. P. Lyman, Hartford, Conn.
Vet. Med. Ass'n of N. J.....	July 14-15, 1909.	Atlantic City.	W. Herbert Lowe, Paterson.
Connecticut V. M. Ass'n.....	.....	New Haven ..	B. K. Dow, Willimantic.
New York S. V. M. Soc'y.....	Sept., 1909	Ithaca	J. F. De Vine, Goshen.
Schuylkill Valley V. M. A.....	June 16, 1909.	Reading	W. G. Huyett, Wernersville.
Passaic Co. V. M. Ass'n.....	Call of Chair...	Paterson, N. J.	H. K. Berry, Paterson, N. J.
Texas V. M. Ass'n.....	Call Exec. Com.	.....	R. P. Marsteller, College Sta.
Massachusetts Vet. Ass'n.....	Monthly.....	Boston.....	Wm. T. White, Newtonville.
Maine Vet. Med. Ass'n.....	April.....	Bangor	A. Joly, Waterville.
Central Canada V. Ass'n.....	.....	Ottawa	A. E. James, Ottawa.
Michigan State V. M. Ass'n.....	Jan. 25-26, 1910.	Saginaw	Judson Black, Richmond.
Alumni Ass'n, N. Y.-A. V. C.....	April 14, 1909....	141 W. 54th St.	L. L. Glynn, N. Y. City.
Illinois State V. M. Ass'n.....	July 13, 1909....	Bloomington..	J. H. Crawford, Harvard.
Wisconsin Soc. Vet. Grad.....	.....	.....	S. Beattie, Madison.
Illinois V. M. and Surg. A.....	Jan. and Aug....	Louisville....	W. A. Swain, Mt. Pulaski.
Vet. Ass'n of Manitoba.....	Not stated.....	Winnipeg.....	F. Torrance, Winnipeg.
North Carolina V. M. Ass'n.....	.....	Raleigh	Adam Fisher, Charlotte.
Ontario Vet. Ass'n.....	.....	.....	C. H. Sweetapple, Toronto.
V. M. Ass'n, New York City.....	1st Wed. ea. mo.	141 W. 54th St.	W. Reid Blair, N. Y. City.
Ohio State V. M. Ass'n.....	.....	Columbus.....	Sidney D. Myers, Wilmington
Western Penn. V. M. Ass'n.....	1st Wed. ea. mo.	Pittsburgh....	F. Weitzell, Allegheny.
Missouri Vet. Med. Ass'n.....	.....	St. Joseph....	F. F. Brown, Kansas City.
Genesee Valley V. M. Ass'n.....	.....	Rochester....	J. H. Taylor, Henrietta.
Iowa Veterinary Ass'n.....	.....	Ft. Dodge.....	H. C. Simpson, Denison.
Minnesota State V. M. Ass'n.....	.....	.....	G. Ed. Leech, Winona.
Pennsylvania State V. M. A.....	.....	Philadelphia..	F. H. Schneider, Philadelphia.
Keystone V. M. Ass'n.....	Monthly.....	Philadelphia..	S. Lockett, Glenolden.
Colorado State V. M. Ass'n.....	June, 1909.....	Denver.....	M. J. Woodliffe, Denver.
Missouri Valley V. Ass'n.....	June, 1909.....	Omaha.....	B. F. Kaupp, Fort Collins, Colo.
Rhode Island V. M. Ass'n.....	Jan. and June....	Providence...	T. E. Robinson, Westerly.
North Dakota V. M. Ass'n.....	Call of Sec'y....	Fargo	C. H. Martin, Valley City.
California State V. M. Ass'n.....	.....	San Francisco.	J. J. Hogarty, Oakland.
Southern Auxiliary of California State V. M. Ass'n.....	Jan. Apl. Jy. Oct.	Los Angeles..	J. A. Edmonds, Los Angeles.
South Dakota V. M. A.....	2d Tues. in Jy. '09	Sioux Falls..	J. A. Graham, Sioux Falls.
Nebraska V. M. Ass'n.....	.....	Grand Island.	H. Jensen, Weeping Water.
Kansas State V. M. Ass'n.....	.....	Topeka.....	B. Rogers, Manhattan.
Ass'n Médéciale Veterinaire Française "Laval".....	1st and 3d Thur. of each month	Lec. Room, Laval Un'y, Mon.	J. P. A. Houde, Montreal.
Province of Quebec V. M. A.....	.....	Mon. and Que.	Gustave Boyer, Rigand, P. Q.
Kentucky V. M. Ass'n.....	.....	Not decided...	D. A. Platt, Lexington.
Washington State Col. V. M. A.....	1st & 3d Fri. Eve.	Pullman.....	R. G. McAlister, Pullman.
Indiana Veterinary Association.....	.....	Indianapolis..	E. M. Bronson, Indianapolis.
Louisiana State V. M. Ass'n.....	.....	.....	E. P. Flower, Baton Rouge.
Twin City V. M. Ass'n.....	2d Thu. ea. mo.	St. P.-Minneap	S. H. Ward, St. Paul, Minn.
Hamilton Co. (Ohio) V. A.....	.....	.....	Louis P. Cook, Cincinnati.
Mississippi State V. M. Ass'n.....	.....	.....	J. C. Robert, Agricultural Col.
Georgia State V. M. A.....	Nov. 16-17, 1909.	Athens.....	P. F. Bahnsen, Americus.
Soc. Vet. Alumni Univ. Penn.....	June, 1909.....	Philadelphia..	B. T. Woodward, Wash'n, D. C.
Virginia State V. M. Ass'n.....	July 9, 1909....	Hampton.....	W. G. Chrisman, Charlo'sv'le.
Oklahoma V. M. Ass'n.....	.....	.....	W. H. Martin, El Reno.
Veterinary Practitioners' Club.....	Monthly.....	Jersey City...	A. F. Mount, Jersey City.
Vet. Ass'n Dist. of Columbia.....	3d Wed. ea. mo.	514-9th St., N. W.....	M. Page Smith, Wash., D. C.
B. A. I. Vet. In. A., Chicago.....	2d Fri. ea. mo...	Chicago.....	D. D. Tierney, Chicago, Ill.
Arkansas Veterinary Ass'n.....	.....	.....	Horace E. Rice, Little Rock.
York Co. (Pa.) V. M. A.....	1st Tues. in Mar.	York, Pa.....	E. S. Bausticker, York, Pa.
Philippine V. M. A.....	.....	.....	R. H. McMullen, Manila.
Montana State V. M. A.....	.....	Helena.....	.....
Veterinary Ass'n of Alberta.....	.....	.....	.....
Chicago Veterinary Society.....	2d Tues. ea. mo.	Chicago	C. H. H. Sweetapple, For. Saskatchewan, Alta., Can.
Maryland State Vet. Society.....	.....	Baltimore.....	J. M. Parks, Chicago.
St. Louis Soc. of Vet. Inspectors.	1st Wed. fol. the 2d Sun. ea. mo.	St. Louis.....	H. H. Counselman, Sec'y.
Washington State V. M. A.....	Seattle.....	Wm. T. Conway, St. Louis, Mo.
			J. T. Seely, Seattle.

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